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A

DESCRIPTION OF THE GENUS

PINUS,

ILLUSTRATED

WITH FIGURES;

DIRECTIONS RELATIVE TO THE CULTIVATION, AND REMARKS ON THE USES OF THE SEVERAL SPECIES:

ALSO

DESCRIPTIONS OF MANY OTHER TREES

OF THE

FAMILY OF CONIFERÆ,

BY

AYLMER BOURKE LAMBERT, Esq. F.R.S. F.S.A. H.S. G.S. M.R.A.S.
VICE-PRESIDENT OF THE LINNEAN SOCIETY, MEMBER OF THE IMPERIAL ACADEMY NATURÆ-CURIOSORUM, OF THE ROYAL ACADEMY OF SCIENCES OF MADRID, AND HONORARY MEMBER OF THE ROYAL BOTANICAL SOCIETY OF RATISBON, &c. &c.

TO WHICH IS ADDED

AN APPENDIX

CONTAINING

DESCRIPTIONS AND FIGURES OF SOME OTHER REMARKABLE PLANTS,

AND AN

ACCOUNT OF THE LAMBERTIAN HERBARIUM,

BY MR. DAVID DON, LIBR. L.S. &c.

This vol. 2 of first edition.
Title page and dedications of 2nd vol. were missing + were supplied by title page + dedication of the 1st. vol of 2nd. ed.
+ See notice in 1st. vol.

~~SECOND EDITION.~~

IN TWO VOLUMES.

LONDON:
MESSRS. WEDDELL, PROSPECT ROW, WALWORTH.
~~MDCCCXXVIII.~~

1824

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TO

SIR RICHARD COLT HOARE, BART.

OF

STOURHEAD,

IN THE

COUNTY OF WILTS,

WHO HAS OCCUPIED A LONG AND USEFUL LIFE, IN THE IMPROVEMENT OF HUMAN KNOWLEDGE,

BY INVESTIGATING THE HISTORY AND ANTIQUITIES

OF HIS OWN AND OTHER COUNTRIES,

AS HIS DIFFERENT PUBLICATIONS FULLY TESTIFY,

THIS WORK IS INSCRIBED,

WITH THE GREATEST RESPECT AND REGARD.

PREFACE

TO THE SECOND EDITION.

The more frequent intercourse with foreign parts, and consequently the greater facilities which scientific travellers find in visiting the remoter regions of the earth, have tended infinitely to enlarge our views in every branch of Natural History, not only by the vast increase of new species, but by the accession of a rich fund of interesting facts and observations. This new edition of my work on the *Coniferæ*, which I have long contemplated, will be found to comprise, besides all the species contained in the two former volumes, plates and descriptions of many new and highly interesting subjects, which, either from want of sufficient materials, were not included in the *second* volume, published in 1824, or have been discovered since its publication. Through the kindness of my excellent friend, Dr. Martius, who has devoted five years to investigating the Botany of the Brazils, at the expense of His Majesty, the late King of Bavaria, I have been enabled to give the portrait of a tree of the *Araucaria Brasiliana*, and likewise of a full-grown cone of the same species. The materials received since the publication of the second volume, from the late celebrated traveller, Mr. Moorcroft, whose premature and unfortunate fate science has cause to deplore, have afforded me an opportunity of adding much both to the plate and description of the *Pinus Deodara*, which, as a timber tree, is now found to be invaluable. A plate of the *Taxodium sempervirens*, and of the curious *Thuja dolobrata* of Thunberg, form part of the additions to the present edition. A specimen with cones of the *Pinus Orientalis*, collected near Teflis, and presented to me by Sir Gore Ouseley, has enabled me to complete the plate, and to speak more decidedly to the specific distinctions of this interesting, and but little known species, than I was justified in doing in my former work. I have very recently received specimens of a Pine collected in the vicinity of Montevideo by my distinguished friend, Captain Phillip Parker King, R. N. who is now engaged on an expedition of survey on the coasts of South America. The tree was reported to Captain King to have been raised from seeds received from Teneriffe, but as it has *foliis geminis*, and is otherwise quite unlike the *Pinus Canariensis*, I am inclined to think that it may have originally been imported by seed from China, and as it approaches very near to *Pinus Massoniana*, it may possibly prove to be the same species; but cones of both are still wanting to establish this point. While this work was nearly through the press, I received intelligence from my friend, Mr. Sabine, the distinguished Secretary of the Horticultural Society, of a most remarkable Pine of extraordinary dimensions, and bearing large cones, with edible nuts, discovered in California by the Society's botanical collector, Mr. David Douglas, who has just returned from an expedition to the north-west coast of America, where he has been for three years. A description of this remarkable tree will appear in the forthcoming part of the "Transactions of the Linnean Society;" and, as Mr. Douglas has brought home abundance of materials, I hope, through the kindness of Mr. Sabine, who is ever alive to the interests of science, to give shortly a plate of it. Mr. Douglas has done me the honour to name it *Pinus Lambertiana*. The trunk of the largest which Mr. Douglas measured was 215 feet high, perfectly straight, with a diameter of 19 feet, and the cones 16 inches long, and 9 in circumference; but the general dimensions of the trees are 150 feet in elevation, and from 8 to 14 feet in diameter.[a] The perusal of the valuable Memoir on the Genera of the *Coniferæ*, by that learned botanist, the late Mons. Richard, and recently published by his son, has led Mr. Don to re-examine the *Dammara Australis* and *Orientalis*, as well as *Taxodium sempervirens*, and thereby to correct some important errors into which he had fallen in his descriptions of them.

[a] Linn. Trans. vol. 15, p. 498.

I have here to acknowledge my obligations to Mr. Don, for the pains he has taken in forming the descriptions of the new species, and the accurate manner in which the whole has been executed. Perhaps it will be necessary here to notice several Pines which appear to me to merit being considered as distinct species; but of which I have not yet been able to obtain sufficient materials to enable me to give descriptions of them. The *first* is a native of China, from whence I have frequently received the cones: from these, and a drawing in the possession of the Horticultural Society, it appears to be a very distinct species, and may, therefore, be called *Pinus Sinensis*. Several plants of this species have lately been raised in this country, so that we shall soon become better acquainted with its characters. Having lately seen drawings done by Japanese artists of the *Pinus Abies* and *Larix*, noticed by Thunberg in the *Flora Japonica*, I am now fully satisfied of their being perfectly distinct from the European species, with which Thunberg has confounded them, as I had at first suspected. For the former I would suggest the name of *Pinus Thunbergii;* and for the latter, noticed by Kæmpfer, that of *Pinus Kæmpferi*. Thunberg's *Pinus Strobus* is evidently the same with my *Pinus excelsa*. As to his *Pinus Cembra* and *sylvestris*, I can say nothing; but I have little doubt that they will prove distinct species. I possess a single plant of a species *foliis ternis*. It comes near to *Pinus longifolia*, and is said to be from Timor. It has hitherto been kept in the conservatory, where it has attained the height of sixteen feet, bearing male catkins annually.

It gives me infinite satisfaction to have an opportunity of acknowledging the many obligations I am under to the Honourable the Court of Directors of the East India Company, to whom botanical science is so much indebted, for the great zeal and liberality they have shown in making known the vegetable treasures of their extended Asiatic possessions, by appointing collectors in various parts of India, and by the establishment of one of the most magnificent Botanic Gardens in the world, at Calcutta, which has furnished to the Gardens of this country their chief ornaments.

I have also to acknowledge my obligations to that distinguished oriental scholar, Charles Wilkins, Esq. who has at all times afforded me free access to the rich collections contained in the Museum of the India House.

The Appendix will be found to contain plates and descriptions of several very remarkable plants, which although not necessarily connected with the work, will yet, I hope, not be considered as out of place. These consist of the *Quercus grandifolia* from Nepal, the *Maclura aurantiaca*, or Osage orange, the *Ilex Paraguensis*, tea-tree of Paraguay, *Ilex Gongonha*, or tea-tree of Brazil, *Ilex Martiniana;* and, lastly, plates of the two magnificent species of *Nepenthes*, which were discovered in Singapore by my highly valued and lamented friend, the late Sir Thomas Stamford Raffles. All these it is hoped will add much to the interest of the work.

At the solicitation of several friends, I have been induced to give, at the end of the work, an account of the various collections contained in my Herbarium. The task of drawing up this account has also fallen to Mr. Don, who I trust will be found to have executed it in a very satisfactory manner.

London, 1st January, 1828.

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Pinus Pallasiana.

Sowerby Delin.

Weddell Sculp.

TAB. 1.

PINUS PALLASIANA.

TARTARIAN PINE.

PINUS PALLASIANA, foliis geminis prælongis erectis rigidis canaliculatis, vaginis abbreviatis, antherarum cristâ subrotundâ convexâ repandâ, strobilis ovato-oblongis sæpiùs curvatis: squamis tuberculatis spinulâ terminatis.

Pinus Maritima. *Pall. Ind. Taur. (fide* specim. in Herb. Lamb.)
Pinus Pinea. *Habl. Taur. p.* 97.
Pinus Halepensis. *Marsch. à Bieb. Fl. Taur. Cauc.* II. *p.* 408. *(exclus. Synon. præter Pall. et Habl.)*
Pinus Laricio. *Marsch. à Bieb. Fl. Taur. Cauc. Suppl.* III. *p.* 623, *(exclus. Synon. præter Pall. et Habl.)*

Habitat in Tauriæ Chersonesi regionibus occidentalibus jugi montium excelsiorum ad Maris Nigri littora usque Yalta et Alushta. *Pallas, Marschall à Bierberstein.*

DESCRIPTIO.

Arbor ampla, magnitudine *Pini sylvestris*, at multò magìs diffusa, ab apice juxta ferè basin ramos numerosos magnos divisos declinato-horizontali-patentes apicibus assurgentibus emittit; *inferioribus* ferè truncum ipsum æquantibus. *Cortex* rimosus, rugosus, fuscus, in laminis deciduus. *Lignum* compactum, album, centro brunneo-rubrum, resinâ turgidum, valdè nodosum. *Folia* gemina, conferta, erecta, rigida, semicylindrica, glabra, lucidula, lætè viridia, 5 pollices longa, margine asperè serrulata, suprà canaliculata, apice mucrone cartilagineo pungente instructa. *Vaginæ* breves, vix semiunciales, teretes, extùs squamis laxis tectæ, ad margines lacerato-membranaceæ, albæ, basi squamâ lanceolatâ longè cuspidatâ infernè persistente induratâ munitæ. *Amenta* terminalia, sessilia, basi squamis numerosis lanceolatis cuspidatis bracteata: *mascula* numerosa, simplicia, cylindrica, sesquiuncialia, densa; *staminibus* monadelphis; *antheris* linearibus, bilocularibus, infernè rimâ longitudinali rumpentibus, pollen granulosum sulphureum effundentibus, apice auctis appendice aut cristâ subrotundâ convexâ repandâ: *fœminea* ovata, terna, basi squamis numerosis lanceolatis membranaceis laxis densè instructa, viridia, erecta, denique fuscescentia, patentia: *squamis* brevibus, circumscriptione rotundatis, crassis, marginatis, retrorsùm imbricatis, suprà carinatis et convexis. *Strobili* plerumque terni, ovato-oblongi, 5-unciales, sessiles, diametro ad basin 2-unciali, declinato-penduli, cinerei, versus apicem subattenuati, decurvati: *squamis* induratis, ligneis, apice dilatatis, trapezoideis, depresso-4-angulis, cinereis, centro tuberculo fusco conico spinulâ terminato elevatis. *Semina* obovata, *testâ* utrinque convexâ crustaceâ: *ala* tenuis, membranacea, falciformis, oblonga, acuta, integerrima.

This tree is confined to the central regions of the Crimea, forming considerable forests on the western declivity of the chain of lofty mountains which extend along the coast of the Black Sea. It is called *Tzaam* in the Tartar language, and forms a tree of great size. Its wood is very knotty and resinous, and very durable, according to Professor Pallas; but difficult to form into good planks on account of its knotty texture. The same distinguished traveller informs us, that the largest beams obtained from it are from 4 to 6 yards in length. The resin of this tree, which is produced in vast quantities, Pallas says "has a pleasant odour, and is employed in fumigating, like that of the Mountain Pine procured from Moldavia." This valuable tree was first raised in this country about fifteen years ago by Mr. Lee, from seeds communicated to him by Professor Pallas. Of all Pines this is the one best adapted for thin chalky soils, and maritime situations, and might be successfully employed for covering our barren sea downs, which at present produce nothing. A few trees, which I planted at Boyton about twelve years ago, are now thirty feet high, and very luxurious; although the soil, in which they are, is scarcely two inches thick on a bed of solid chalk. The tree throws out branches almost to the base of the trunk, which extending in a horizontal direction, protect the roots from the scorching rays of the sun in summer, and likewise serve to retain moisture in the soil. The present Duke of Marlborough planted at White Knights, from sixty to seventy young plants of this species, which have now attained considerable size. It is a remarkable fact, that, although the trees at Boyton House produce plenty of cones annually, the seeds have never yet ripened. This species is distinguished from *Pinus maritima* by the much greater size of its cones, which are most frequently curved and grow in twos or threes together, with their scales tubercular and terminated each by a small hard spinous point. The leaves of *P. Pallasiana* are likewise double the length of those of *maritima*, rigid and much thicker, and the crest of its anthers is twice as broad and more rounded. It also differs from *P. Laricio* by its straight and rigid leaves, furnished with a shorter sheath, and by its cones being double the size, frequently curved with conical scales; and lastly, by the spreading and branchy habit of the tree itself. The cones of variety β represented in the plates are constantly straight, by which mark it differs from the variety α.

EXPLANATION OF TAB. 1.

A. Branch with cones.
B. Female catkins.
C. Young cones.
D. Male catkins.
E. E. Scales of the female catkin, shewing the stigma.
F. F. Anther surmounted by their appendage or crest.
G. Cone.
H. Scale of the cone shewing the seeds.
I. Leaves with their sheath and stipule-like scale.
J. Cones of variety β.

B

B

H

I

C

D

F

E

E

B

G

Pinus Spectabilis.

Sowerby Delin.

Weddell Sculp.

PINUS SPECTABILIS.

PURPLE-CONED FIR.

PINUS SPECTABILIS, foliis linearibus solitariis planis secundis patentibus apice emarginatis subtùs niveis, antherarum cristâ bicorni, strobilis erectis cylindraceis crassis nudis.

Pinus tinctoria et Webbiana. *Wallich in Literis.*

Habitat in Alpe Gosaignsthan Nepalensium dictâ, atque in aliis regionibus jugi Emodi seu Himalayæ. *W. S. Webb.*

DESCRIPTIO.

Arbor magna, formosa, pyramidata, 80-90 pedalis; *diametro* trunci juxta basin 3-4-pedali. *Rami* numerosi, horizontalitèr patentes iterum et iterum divisi, densè foliosi, in verticillis ad nodos dispositi, cortice pallido-cinereo rugoso scrobiculato tecti: *apicibus* assurgenti-incurvis. *Lignum* compactum, albo-roseum. *Folia* linearia, solitaria, conferta, secunda, patentia, coriacea glaberrima, lucida, sesqui v. bipollices longa, 2 lineas lata, suprà intensè lætèque viridia, lineâ depressâ medio canaliculata, margine subdeflexa, integerrima, subtùs nivea, apice emarginata. *Amenta* lateralia, sessilia, basi squamis numerosis brevibus appressè imbricatis (masculis) rotundatis membranceis (fœmineis) latè ovatis cincta; *mascula* numerosa, cylindrica, gracilia, simplicia, è latere inferiore ramulorum extremorum enata: *stamina* monadelphia: *antheris* brevibus, obcuneatis, brevè pedicellatis, retrorsùm imbricatis, apice cristâ convexâ subreniformi supernè conicâ bicorni umbratis: *corniculis* brevissimis, obtusis, divaricatis; *fœminea* solitaria, oblonga, cylindracea, erecta, uncialia, atropurpurea: *squamis* brevibus, cuneato-rotundatis, margine membranaceis, repando-denticulatis, apice recurvatis, mucronatis. *Strobili* solitarii, erecti, obtusi, cylindracei, 4 v. 6 pollices longi, diametro sesqui v. biunciali, ad latus superius ramulorum extremorum adnati, colore intensè purpureo, turgidi resinâ, cujus globulis numerosis crystallinis pendulis irrorati; expressione tinctûs materiem colore purpureo usurpandam largientes: *squamis* brevibus, latissimè cuneatis, apice valdè dilatatis, coriaceis, circumscriptione rotundatis, integerrimis, inflexis, densè imbricatis, sine acumine (ut in *P. piceâ* et *balsameâ*), basi infrà squamulâ persistente auctis. *Semina* ovali-oblonga, angulata, testâ crustaceo-coriaceâ crassâ obvoluta, gustu acri et odore intenso resinæ gaudent: *ala* tenuis, membranacea, lata, integerrima, obovato-dolabriformis.

This is undoubtedly the finest of the Fir tribe. I am indebted to the kindness of my friend Dr. Wallich for excellent specimens of it. It was discovered by Captain W. S. Webb, a distinguished traveller, and a zealous investigator of natural history, deservedly known for his admirable survey of the Himalaya Alps. I have, at various times, received seeds of it from Dr. Wallich, but their vegetable power has always been destroyed. It is very much to be regretted that no plants of this splendid fir have been raised in this country, as it would prove a most valuable acquisition to our lawns, and likewise a tree of great utility, from its fine timber, which even equals in the texture of its grain and in odour the Bermudas cedar (*Juniperus Bermudiana*, Linn.) I have received a very fine specimen of the timber from my often-mentioned friend Dr. Wallich. The seeds of this species possess a greater portion of resin, and a stronger turpentine smell, than any other with which I am acquainted.

I shall subjoin the following highly interesting extracts, respecting this Fir, from letters received from Captain Webb, during his residence in Nepal, and by Dr. Wallich transmitted to me. "This purple-coned Pine is called *Oumur*. It attains a height of 80 or 90 feet, with a diameter of the stem near the ground of 3 to 4 feet. The cone about $3\frac{1}{2}$ inches long, and $1\frac{1}{2}$ inch in diameter, is produced on the extremity of the shoots. The leaves are about one inch long, of a beautiful bright green, having a white stripe along the centre. The wood is used for planes. The fruit, in an incipient state, is attached to the specimens, and is said to yield at full growth an Indigo or purple pigment by expression. The silvery hue of its bark, the beautiful contrast of the leaves with the rich purple of the cone, glittering with globules of transparent resin, produce in combination one of the most striking objects which can well be imagined; it is entitled to precedence for ornamental purposes, and would, I doubt not, be thought a desirable acquisition in England."

EXPLANATION OF TABLE 2.

B, B, B. Branches bearing male catkins.
C. Female catkin.
D. Scale of the female catkin.
E, E. Anthers.
F. Leaf.
G. Portion of a ripe cone shewing the rachis, to which the scales are attached.
H. Scale of the cones, shewing the seeds.
I. Seed.

B

G

H

A

C

D

E

F

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Pinus Excelsa.

Sowerby Delin.

Weddell Sculp.

TAB. 3.

PINUS EXCELSA.

BHOTAN PINE.

PINUS EXCELSA, foliis quinis prælongis tenuissimis laxis, antherarum cristâ subrotundâ simplici truncatâ laceratâ, strobilis cylindraceis lævibus pendulis foliis longioribus.

Pinus excelsa. *Wallich in literis.*

Habitat in Nepaliâ ad Narainhetty *(Buchanan)*, in Bhotaniâ *(W. S. Webb,)* in Nepaliæ Alpibus. *Wallich.*

DESCRIPTIO.

Arbor excelsa, formosa, pyramidata, ad 90 usque 120 pedes attingens. *Rami* numerosi, assurgentes, divisi, in verticillis ad nodos dispositi. *Cortex* integerrimus, lævis, mollis, plumbeo-cinereus. *Lignum* album, turgidum resinâ terebintaceâ limpidâ. *Folia* quina, prælonga, tenuissima, triquetra, laxa, glauco-viridia, lenta, 5 v. 7 pollices longa, angulis denticulis remotis exasperata, apice mucronulo calloso instructa, ad ramulos undiqùe conferta atque versus apices ramulorum comoso-penicillata, suprà bicanaliculata, subtùs plana. *Vaginæ* vix semiunciales, caducæ, squamis numerosis lineari-oblongis fulvis membranaceis imbricatæ. *Amenta* terminalia, basi squamis pluribus membranaceis fuscis suffulta; *mascula* ovata, brevia, obtusa, sessilia, densa, in capite glomerata, 3 lineas longa, 1 lineam crassa: *staminibus* monadelphis: *antheris* brevissimis, subrotundis, bilocularibus, infernè rimâ longitudinali dehiscentibus, polline sulphureo turgidis, apice auctis cristâ parvâ subrotundâ simplici membranaceâ rufo-fuscâ, margine fimbriato-lacerâ; *fœminea* oblonga, cylindracea terna v. quaterna, erecta, pedunculata: *squamis* latè rotundatis, introrsùm imbricatis, coriaceis, crassis, marginatis, lævibus. *Strobili* 3 v. 4, cylindracei, pedunculati, nudi, lævigati, $6\frac{1}{2}$ pollicares, ad maturitatem penduli, diametro 2-unciali, versus apicem subattenuati: *squamis* latissimis, cuneatis, coriaceis, crassis, appressè imbricatis, lævissimis, luteo-fuscis, supernè mucrone brevi crasso obtuso atrofusco apiculatis. *Semina* ovoidea, ancipiti-compressa: *testa* ossea, nigrescens, maculis cinereis notata: *ala* oblonga, obtusa, membranacea, ferruginea, subacinaciformis, reticulata.

This species approaches so near in habit and in the figure of its cones to *Pinus Strobus*, that were it not for the simple round membranous crest of the anthers, it would be almost impossible to distinguish their limits as distinct species. The leaves of this species are considerably longer than those of the *P. Strobus*,

and the cones larger. I have been fortunate in raising many young plants of this fine species, which, however, are still so small, that I have not yet ventured to put them out in the open ground; but I have little doubt, considering the great elevation at which it is found, that it will prove equally hardy with the Weymouth Pine. This Pine is frequent both in Upper Nepal and Bhotan; in the former country it was first gathered in the year 1802, by Dr. Francis Hamilton, near Narainhetty, and it is noticed in his "Account of Nepal," under the name of *Pinus Strobus*, from which he did not venture to separate it. I am indebted to my excellent friend Dr. Wallich for numerous fine specimens of it in various states. He informs me that in Nepal it is known by the names of *Deooshera*, *Deoologhosee* or *Dhoop*, words belonging to the Nawarree and Parbuttee languages. I shall conclude this article by adding the following interesting extract from Captain W. S. Webb's letters: "*Lemshing* in the Bhotea, *Raesula* (or King of Firs) in the Hindustanee language. This large tree is found in most parts of Bhotan; and its timber is preferred above all the rest, by the Bhoteas. The cone in an incipient state is erect, but as it approaches to maturity it declines, and ultimately becomes pendulous, before its scales open. It yields in great quantities a pure and limpid turpentine, by the slightest incision; and appears to me to merit the title of pre-eminence which has been conferred upon it, in every respect."

EXPLANATION OF TAB. 3.

A. Cone-bearing branch.
B. Branch with the male catkins.
C. Leaves.
D. Stipule-like scale.
E. E. Male catkin.
F. Anther.
G. Young cones.
H. Cone half grown.
I. Scale of the cones, shewing the seeds.

PINUS DUMOSA.

ALPINE FIR.

PINUS DUMOSA, foliis solitariis linearibus obtusis secundis, subtùs glaucis, margine deflexis, versus apicem denticulatis, strobilis ovatis terminalibus solitariis: squamis rotundatis margine erosis.

Habitat in Alpe immensâ Gosaingsthan Nepalensium, ubi Silloo-hatarhee dicta *(Wallich)*, in Bhotaniæ alpibus. *W. S. Webb.*

DESCRIPTIO.

Arbor procera, facie *P. Canadensis*, densa. *Rami* numerosi, patuli, virgati, cortice cinereo-fusco obducti. *Folia* solitaria, linearia, obtusa, secunda, magìs conferta quàm in *P. Canadensi*, 5 lineas aut pollicem longa, $\frac{1}{2}$ lineæ latitudine, suprà viridia, nitida, subtùs glauca, margine deflexa, versus apicem obsoletè denticulata. *Strobili* ovati, mucronulati, terminales, solitarii, læves, sessiles: *squamis* latè rotundatis, ferè membranaceis, cinereo-fuscis, margine crispulatis et erosis. *Semina* parva, cuneata, ferruginea, alâ oblongâ obtusâ pallidâ nitidâ scarioso-membranaceâ instructa.

Obs. Pino Canadensi omninò similis; at differt foliis longioribus margine deflexis magìs confertis, strobilis majoribus cum squamis omnibus manifestè erosis.

Having only seen imperfect specimens of this species, I was unable to give a figure of it. The specimens had all dropt their leaves; but, from their form and insertion, as well as the figure of the cones, it clearly appears to be very nearly allied to the Hemlock Spruce, *(P. Canadensis)*, differing, however, from it in having longer and more crowded leaves, with their margin deflected: the cones are larger, with the scales waved and somewhat torn at the margins. It is found both in Nepal and Bhotan. Dr. Wallich's collectors have gathered it on Gosaingsthan, one of the lofty peaks of the Himalaya or Emodus. It is said to be found only at great elevations. In Nepal, it is called *Silloo-hatarhee*, and in Bhotan *Tongshing*. The following extract respecting this Fir is from Captain Webb's letters: "This Pine was found in the southern confines of Bhotan, where it is called *Tongshing*. It delights in elevated positions, throwing out branches at fifteen or twenty feet. The leaves are extremely deciduous, a trifling shake being sufficient to detach them. The wood is not used, being likely to warp."

PINUS DEODARA.

INDIAN CEDAR.

P. Deodara, foliis fasciculatis perennantibus acutis triquetris rigidis, strobilis geminis ovalibus obtusis erectis: squamis appressis.

Pinus Deodar. *Roxb. Fl. Ind. ined.*

Habitat in Indiæ Orientalis montibus ad urbis Rohilcund Septentrionem. *Roxburgh.*

DESCRIPTIO.

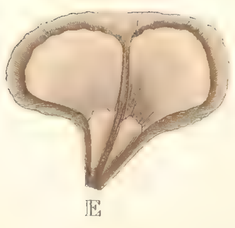
Arbor maxima, trunco crassissimo ad usque 3–4 pedes diametro. *Rami* ampli, patentissimi, supernè foliosi. *Ramuli* assurgentes, tuberculosi è basi foliorum persistente, cortice cinereo obducti. *Folia* in fasciculis numerosa, rigida, perennantia, triquetra, sesquipollicaria, acicularia, viridia, lucida, bicanaliculata, apice acuta, callosa. *Strobili* pedunculo tereti crasso dichotomo gemini, ovales, obtusissimi, erecti, vix bipollicares, crassitie unciales et ultrà: *squamis* latissimis, transversè oblongis, lamelliformibus, ferrugineo-fuscis, appressè imbricatis, margine integerrimis atque planis, ferè membranaceis. *Semina* parva, cuneata: *ala* obovata, membranacea, fusca.

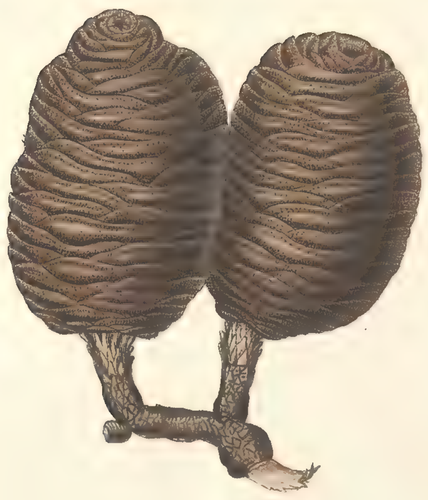
The *Pinus Deodara* is a tree of great size, and is rendered interesting by its near affinity to the Cedar of Lebanon. In the Hindustanee language it is called *Devadara* or "God Tree," and is held in great veneration by the Hindoos. The cones grow in pairs on a shortish, thick, woody, forked footstalk. Those of the *Pinus Cedrus* are almost sessile and solitary. The leaves are also different from those of *P. Cedrus*, being longer, and more distinctly 3-sided. I have received from Dr. Wallich a section of the trunk of the *P. Deodara*, measuring nearly four feet in diameter. The wood is very resinous, and possesses a strong turpentine smell, very different from that of the Cedar of Lebanon; but it is so very porous, and of so coarse a grain, that I should judge it to be of very little use, unless for fuel.

A

B

C


E


D

Pinus Deodara.

Weddell Sc.

Tab 4

C

J

K

I

H

G

G

B

F F F

E

A

D

D

Sowerby. Delin.

Araucaria Imbricata.

Weddell. Sculp.

TAB. 4.

ARAUCARIA. *Juss.*

DOMBEYA. *Lam.*

PINI SP. *Molin.*

DESCRIPTIO.

Flores dioici. Masc. *Amentum* dipsaciforme, ovato-cylindricum. *Squamæ* numerosæ, sessiles, imbricatim ad axim communem conicum compactæ, filamentorum æmulæ, obovatæ, sublignosæ, acumine oblongo reflexo. *Antheræ* numerosæ, oblongæ, biloculares paulò infra acumen squamarum connatæ, posteà dependentes, liberæ, initio squamis adpressæ, tandèm, emisso polline, divaricatæ.

Fœm. *Amentum* ovatum, in quo squamæ numerosæ, cuneiformes, biforæ. *Germen* cuneiforme, compressum duobus lateribus oppositis. *Stylus* nullus. *Stigma* bivalve, callosum, crassum: *valvularum* exterior ovato-acuminata, major, concava, acumine lineari inflexo; interior minor, sublinearis, obtusa, erecta. Pericarpium: *Strobilus* sphærico-ovatus, cujus squamæ conniventes, coriaceo-lignosæ, cuneiformes, acumine longo subulato terminatæ, dispermæ. Semen: *Nux* cuneiformis, apice terminata alâ brevi, callosâ, marginali, basi obtusè tetragona, dehinc gibba, supernè compressa, lateribus oppositis: *tegumento* coriaceo. *Nucleus* ejusdem figuræ. *Pavon Dissert. in Mem. Acad. Reg. Med. Matrit. I. p.* 197.

This genus belongs to the sixteenth class of the Linnæan system, called *Monadelphia*, and to the Natural Order *Coniferæ* of Jussieu and Linnæus.

In the month of September, 1782, I left, for some time, my companion Don Hippolito Ruiz, and visited the mountains named Caramavida and Naguelbuta belonging to the Llanista, Peguen and Araucano Indians. I spared neither pains nor expense in fulfilling the object of my mission, and amongst many plants, which were the result of my two months excursion, I found in flower and fruit the tree which I am about to describe.

The chain or Cordillera of the Andes offers to the view in general a rocky soil, and in parts wet and boggy, on account of the abundance of rain and snow, which fall in these regions, similar to many provinces of Spain. There are to be seen large forests of this tree, which rises to the amazing height of 150 feet: its trunk is quite straight and without knots, ending in a pyramid formed of horizontal branches, which decrease in length gradually towards the top, and is covered with a double bark: the inner is five or six inches thick, fungous, tenacious, porous and light, from which as almost from all other parts flows resin in abundance: the outer is of nearly equal thickness, resembling Cork cleft in various directions, and equally resinous with the inner.

I have found only one species of this genus, which I call *imbricata* on account of its imbricated leaves, and which may be defined as follows:

A. imbricata, foliis octonis imbricatis ovato-lanceolatis mucronatis perennantibus.

Pinus Araucana. *Molin. Sagg. sulla Storia Nat. del Chili, p.* 182.

Truncus rectissimus, 150 pedes sæpè altus, comâ frondosissimâ conico-pyramidali terminatus: cujus cortex est fungosus, valdè rimosus, crassitie semipalmari. *Rami* verticillati, sex septemve in singulis verticillis, et sæpiùs octo in *inferioribus*, horizontales, extremitatibus inflexo-adscendentibus. *Ramuli* erecti. *Folia* imbricata, sessilia, subdecurrentia, versus basin incrassata, ovato-lanceolata, stricta, apice rigido-mucronata, verticillata, sena, septena octonaque, concava, rigida, glaberrima, nitida, coriacea, perennantia, margine cartilaginea, inferiùs subcarinata, notata lineis longitudinalibus utrinque punctatis. *Amenta masculina* in distinctâ arbore, et in apice ramulorum, quatuor, quinque, sexve aggregata, pedunculata, ovato-cylindrica, dipsaciformia, erecta, sublutea: *squamæ* arctè imbricatæ, minores quam in flore fœmineo.

Strobili cordiformes, solitarii, cernui, terminales, brevitèr pedunculati, capitis humani magnitudine: *Squamæ* cuneiformes, glabræ, acumine longo subulato terminatæ, coriaceo-lignosæ.

Semina cuneiformia, sæpiùs gibba, gemina, tegumento coriaceo castaneæ coloris. *Pavon in l. c.*

Habitat copiosissimè in Sylvis Chili (Cordilleras de los Andes vulgò nominatis) et prope Araucum et in montibus Caramavida, Naguelbuta, Tucassel, Santa Barbara, Nacimiento, et juxta Oppidum Conceptionis Chili. Floret Septembri, Octobri, et Novembri. Appellatus vulgò Pino de Chile et Peguen. *Pavon in l. c.*

The wood of this tree is of a yellowish white, fibrous and full of very beautiful veins, capable of being polished and worked with facility. It is probably the best adapted for ship-building, as has been shewn by the experiments made by Don Francisco Dendariarena in the year 1780, in consequence of which orders were given to supply the squadron commanded by Don Antonio Bacaro, then at anchor in the port of Talcaguano.

The resin abounding in all parts of the tree is white, its smell like that of frankincense, its taste not unpleasant. It is applied in plaster as a powerful remedy for contusions and putrid ulcers; it cicatrizes recent wounds, it strengthens fractures and relaxations, it mitigates headaches, and is used as a diurectic (in pills) to facilitate and cleanse venereal ulcers. The Indians make use of the fruit of this tree as a very nourishing food; they eat it raw, as well as boiled and roasted; with it they form pastry, and distill from it a spirituous liquor. There are stated times to collect the fruit, which they preserve to make use of as required.

Messieurs Lamarck and de Jussieu saw in Paris the specimens, which I had given to M. Dombey; and although Lamarck refers to them, without mentioning the description, which I also gave to M. Dombey, I fear that he made no use of it, as Jussieu, the possessor of the specimens, in speaking of the female flowers, does not take upon himself to decide, whether the scales, which crown the nut, are stigmas or not; and which M. Lamarck says could only be determined in Chili. They proved without doubt, their talent and acuteness; but they had not the opportunity that I had, of examining the tree itself.

I observed, amongst other things, that the interior of each scale had two ovaries, which Molina had also remarked; but the French professors said that it had only one, and, consequently, that the nut which followed in each scale was solitary. M. de Jussieu was, likewise, mistaken in calling the testa or covering of the nuts evalvular and without sutures. As far as relates to the anther, Jussieu certainly explained himself better than Lamarck; he says that they were 10 or 12, and I have always found them in greater number. I omit other mistakes, as they do not belong to the fructification, in which the characters above mentioned ought to be reformed.

The preceding elaborate account is taken from a valuable paper of Don Joseph Pavon's, inserted in the first volume of the "Memoirs of the Royal Academy of Sciences of Madrid." In a letter which I have lately received, M. Pavon mentions an important particular, not noticed in the above description, namely, that the male tree is not half the size of the female, seldom exceeding 40 feet in height, with the leaves very much like those of the *Araucaria Brasiliana*, although of a different texture and colour. I am indebted to M. Pavon for native specimens of it, and for the drawing from which the greater part of the fine engraving accompanying this account was taken. Figures A, D, E, and F, have been added from specimens collected in the neighbourhood of Mendoza in Chili, by Mr. Menzies in Vancouver's Voyage, and now deposited in the Banksian Herbarium.

The cone here figured is scarcely half grown, which M. Pavon was induced to take, from the great difficulty of procuring an entire full grown cone; they being so liable to fall to pieces when ripe, and to be devoured by birds and other animals. The only plants of this species, in the country, are those contained in the Royal garden at Kew; they were raised from seeds brought home by Mr. Menzies. One of these trees planted in the open ground is now 12 feet high, and seems perfectly hardy.

EXPLANATION OF TAB. 4.

A. Branch of the female tree.
B. Branch of the male tree terminated by a ripe catkin.
C. Portion of a branch terminated by a cone.
D, D. Male catkins.
E. Section of a young male catkin.
F, F, F. Young anthers.
G, G. Ripe anthers.
H. Foliaceous appendage of the nut
I. Ovaries.
J. Nut terminated by its leafy appendage.
K. Kernel.

TAB. 5.

ARAUCARIA BRASILIANA.

BRAZIL PINE.

ARAUCARIA BRASILIANA, foliis laxè imbricatis lanceolatis mucronatis glauco-viridibus subtùs carinatis, amentis fœmineis subrotundo-ovalibus: squamis apice recurvatis, ovariis solitariis

Habitat copiosè in Brasiliæ montibus nemorosis Organos dictis, non procul ab urbe Rio de Janeiro.

DESCRIPTIO.

Arbor facie et mole *præcedentis*; sed magìs laxa et diffusa. *Rami* numerosi, foliosi, approximati, nunc ferè verticillati. *Ramuli* (in *arbore juveni*) lenti, patuli, viminei, teretes, cortice viridi lævique obducti. *Folia* lanceolata, mucronata, integerrima, haùd cartilaginea, plurimùm magìs laxa atque substantiâ triplò tenuiora quam *præcedente*, glaberrima, suprà concava, lætè viridia atque nitida, subtùs glauca et carinata, aliquantò lenta, 1 v. 2 pollices longa, 3 lineas lata, utrinque sed præsertìm subtùs punctis lineatis numerosis minutissimis notata; dùm illa *arboris tenerœ* sunt sparsa, patentia, lineari-lanceolata, attenuata, bipollicaria, vix 2 lineas lata. *Amenta mascula* nondùm vidi; *fœminea* subrotundo-ovalia, in apice ramulorum solitaria, sessilia, facie et magnitudine capiti *Dipsaci sylvestris* similia: *squamis* crassis, compressis, cuneato-oblongis, quadrangulis, substantiâ firmâ suberosâ, supra receptaculum conico-cylindricum densè collocatis, singulis appendice lanceolatâ acutâ recurvatâ terminatis, ad basin lateris superioris intùs cavis, atque fœtâ nuce solitariâ monospermâ instructis. *Nux* facie et colore omninò *præcedentis*.

The Chili and Brazil Pines have long been regarded as identically the same species; but a careful investigation proves them to be essentially different. The Brazilian species is characterized by its more spreading and branchy habit; by its loosely imbricated, longer, glaucous-green leaves, which are of a much thinner and more flexible texture than those of *A. imbricata* and terminated by a less rigid point; and lastly, by the form of its female *amenta* which are rounded-oval, with the scales terminated by a short, linear-lanceolate, acute, recurved appendage or scale, and bearing each solitary *ovula*. Its quick and vigorous growth is also an important characteristic mark. The *Araucaria imbricata* is, on the contrary, of remarkable slow growth, with the leaves closely imbricated, very rigid, dark green on both sides, and of a thick coriaceous texture, cartilaginous at the margins. The scales of the female *amenta* are terminated by a much longer, broad-lanceolate,

B

A

Araucaria Brasiliana.

Sowerby. Delin.

Weddell. Sculp.

A. Mann. Del.

Cone of the Araucaria Brasiliana.

Weddell. Sc.

.

pointed, leafy-like appendage. The *ovula* are constantly two, according to M. Pavon. Baron Langsdorff the Russian Consul General in the Brazils was so kind as to send me some years ago a few seeds of the Brazilian Pine, from which I was fortunate in raising one plant, which is now eight feet high and very luxuriant. It propagates freely by cuttings, and in that way I have obtained since, many young plants, from that tree. Mr. Lee, some years ago, succeeded in raising several hundreds from seed, which he obtained from the Brazils, several of them are now from six to eight feet high. He also received an entire cone, which I was not fortunate enough to see; but from the description he gave me of it, it appears to have been of nearly the same shape and size with the Chili Pine, and like it, drooping. The nuts seldom succeed when sown, unless those obtained with the entire cone. They are sold as an article of food in the streets of Rio de Janeiro. The specimen from which our drawing was taken is in the possession of Dr. Sims who kindly lent it me. It was collected in the Brazils by Mr. Sello a naturalist in the service of the king of Prussia.

EXPLANATION OF TABLE 5.

A. Branch of the female tree, with two young cones.

B. Leaf.

DAMMARA AUSTRALIS.

DAMMARA. *Rumph.*

AGATHIS. *Salisb.*

PINI SP. *Lamb.*

Flores monoici. Masc. *Amentum* cylindricum, valdè compactum, firmum. *Antheræ* in singulâ squamâ 3 ! pendulæ, sub peltâ convexâ osseâ adnatæ, vix inter se coalitæ, circa latus inferius columellæ dispositæ, singulæ, biloculares, duplici rimâ longitudinali dehiscentes. Fœm. *Amentum* ovali-oblongum, compactum, teres, læve. *Strobilus* turbinatus : *squamis* crassis, coriaceis, cuneatis, extùs convexis. *Semina* ad singulam squamam bina, cuneata, alâ membranace âinstructa: *testa* crassa, crustacea. *Embryo* rectus, ovali-oblongus, dicotyledoneus, cavitati seminis conformis: *cotyl.* orbiculatæ, plano-convexæ, crassæ : *radicula* cotyledonibus duplò longior, recta, basi obtusa et attenuata.

Arbores (*Amboinæ et Novæ--Zeeland. Insular.) amplæ, frondosæ,* Podocarpi *facie, resinifluæ.* Folia *elliptica, v. oblonga, lata, plana, solitaria, nunc opposita.* Flores *monoici, utriusque sexûs in amentis solitariis digesti.*

Dammara Australis, foliis alternis lineari-oblongis ellipticisve enerviis rigidis, strobilis turbinatis : squamis apice patulis acutis.

Habitat in Nova-Zeelandiæ nemoribus copiosè præsertìm circa Æstuarium Queen Charlotte's dictum.

DESCRIPTIO.

Arbor vasta, 80 ad 140 pedes alta. *Truncus* strictissimus, 40 v. 70-pedalis ad usque ramos, diametro 4-7 pedali, cortice integro crasissimo plumbeo tectus. *Rami* numerosi, patentes, subremoti, crassitudine corporis humani, in *ramulis* iterùm et iterùm divisi, superne adscendentes, frondosi, infernè de lapsu foliorum nudi. *Lignum* album, resinâ liquidâ terebinthaceâ turgidum. Folia numerosa, alterna, sessilia, lineari-oblonga v. rariùs elliptica eorum *Buxi* texturæ atque faciei ferè similia, obtusa, integerrima, marginata, coriacea, rigida, erecto-patentia, unam v. sesquipollicem (nunc solùm semiunciam) longa,

Dammara Australis.

Sowerby. Delin.

Weddell Sculp.

3 lineas v. rariùs semiunciam lata, utrinque plana, nitida, enervia, pallidè viridia, basi latiuscula, vix angustata (ut in *D. orientali*). *Amenta* solitaria, in apice ramulorum axillaria, pedicello crasso brevissimo suffulta; *mascula* cylindrica, erecta, uncialia, diametro 2-lineari, valdè compacta, imbricata, dura, basi nonnullis bracteolis rotundatis instructa: *antheris* in singulâ squamâ 3! pendulis, sub peltâ v. cristâ convexâ suborbiculatâ crassâ osseâ integerrimâ adnatis, vix inter se coalitis, circa latus inferius columellæ dispositis, singulis polline sulphureo turgidis, bilocularibus, duplici rimâ longitudinali dehiscentibus; *fœminea* erecta, oblonga, uncialia, pedicello brevissimo crasissimoque ligneo suffulta. *Strobili* sparsi, in summo ramulorum solitarii, turbinati, erecti, pedicellati: *squamis* brevibus, latissimè cuneatis, crassis, coriaceis, arctè imbricatis, intùs ferrugineis, margine dilatatis undulatis atque membranaceis, extùs versus apicem crassioribus, ligneis, cartilagineis, lævissimis, duris, plumbeo-cinereis, apice patulis acutis. *Semina* bina, cuneata, fusca, apice alâ tenuissimè membranaceâ integerrimâ obliquâ pallidâ instructa.

When I published my former work on Pines; although I was well aware that the Dammar would prove a very different genus from *Pinus;* yet, as I had not then sufficient materials to enable me clearly to define its characteristic marks, I preferred uniting it to that genus. Great credit is due to Mr. Salisbury, who, in his valuable paper on the *Coniferæ* inserted in the "eighth volume of the Transactions of the Linnæan Society," was the first to separate it, and has there, with great accuracy, determined its distinguishing characters. The fine species, of which I have here given a figure is a valuable addition to the genus, and will serve to illustrate and establish with greater precision those important marks, on which the genus is founded. I have retained the old name given to this genus by Rhumphius, in preference to that proposed by Mr. Salisbury. I am not disposed to agree with that gentleman regarding the structure of the anthers, which he considers as being many-celled; instead of considering each as composed of three bilocular anthers very slightly cohering together.

This latter is the view, which I am inclined to take respecting the structure of the anthers in *Dammara*, and I am farther supported in this opinion, by the same structure occurring in *Araucaria*, where the anthers are still more evidently separate from each other. In *Dammara* the cotyledons are two, and constantly undivided, having none of those longitudinal lines of separation, which we find in *Abietinæ Cupressinæ* and other sections of the order *Coniferæ*, The *Dammara Australis* may justly be ranked as one of the finest timber trees which New Zealand produces, often rising to the amazing height of 140 feet, with a diameter, near the base, of 4 or 7 feet. Its trunk is straight and even-grained, rendering it very suitable for ship masts. The tree yields, both by incision and spontaneously, vast quantities of a pure and limpid resin, which soon hardens on exposure to the air. An extensive cabinet-maker has tried this resin in varnishing, and declares that it is equal, if not superior, to the best copal varnish. This valuable resin is perhaps deserving of attention as an article of commerce. For the branch, represented in the plate, I am indebted to the friendship of John Deas Thompson, Esq. Commissioner of the Navy. It was brought home by Capt. Downie, under whose orders two ships were sent by Government sometime ago, for the purpose of procuring timber fit for ship-building. Captain Downie had the kindness to present me with a large mass of the Cowrie resin, contained in a box made of the timber, which, in grain, resembles the finest deal.* The *Pinus Dammara*, which I propose to call *Dammara Orientalis*, may be characterised as follows:

* I am indebted to my friend John Barrow, Esq., Secretary to the Admiralty, for the following statement of a comparison, which he made between a piece of Cowrie and Riga Fir.

A piece of Cowrie $1\frac{1}{2}$ inch square, 3 feet long, suspended 10 inches from the end, bore the weight of 1cwt. 2qrs. 15lbs. at the other end, before it broke. The piece weighed 1lb. 10oz.

A piece of Riga Fir bore the weight of 1cwt. 2qrs. 11lb. The piece weighed, 1lb. 8oz.

D. ORIENTALIS, foliis oppositis ovali-oblongis nervosis basi attenuatis, strobilis turbinatis: squamis adpressis apice rotundatis.

Dammara alba. *Rumph. Amb.* 2. *p.* 174. *t.* 57.

Pinus Dammara. *Lamb. Pin. p.* 32. *t.* 38.

Arbor Javanensis visci foliis latioribus conjugatis, Dammara alba dicta. *D. Sherard. Raii Hist. 3. dendr.* 130.

Habitat in Amboinæ montibus altis.

EXPLANATION OF TAB. 6.

A. Branch with a cone and male catkins.
B. Male catkin.
C. A transverse section of the same.
D, D. Anthers attached to the columella and surmounted by the crest.
E. Anther separate.
F. Cone.
G, G. Scales of the cone.
H, H. Seeds.

JUNIPERUS SQUAMATA.

CREEPING CEDAR.

J. Squamata, foliis ternis adpressè imbricatis ovato-oblongis acutis acuminatisve; emarcidis persistentibus; novellis inflexo apice quasi obtusis, baccis ovatis summo umbilicatis, ramis ramulisque confertissimis teretibus, caule prostrato.

Habitat in Bhotaniæ Alpibus. *W. S. Webb.*

Frutex magnus, decumbens, ramosissimus. *Rami* ampli, 3-6-pedales, reclinati, apice adscendentes, cortice fusco-purpureo in laminis deciduo tecti. *Ramuli* cum novellis confertissimi, teretes, undique foliis imbricati. *Folia* terna, oblonga, adpressè imbricata, intensè viridia, lævissima, extùs convexa; *novella* plerumque obtusa, apice inflexo; *adultiora* acuta v. sæpiùs acuminata; *emarcida* semper apice elongato acuminato instructa, persistentia, ad ramos utpotè squamæ adhærentia, undè nomen desumpsit. *Baccæ* numerosæ, subrotunda-ovatæ, solitariæ, rubræ, pedicello brevi squamoso suffultæ, summo umbilicatæ, paulò majores quàm *J. communi.*

This new species of *Juniperus* is only met with at great elevations on the Himalaya Range, in situations where the snow lies during a great part of the year. It is called by the natives *Pudma Chundur*, and is said to be so plentiful in the district called Garawhal, that the inhabitants use it for fuel. The wood is said to be made use of by the Hindoos in their sacrificial offerings, like the ancient cedar.

JUNIPERUS UVIFERA.

LARGE FRUITED JUNIPER.

Juniperus Uvifera, foliis ovatis obtusis appressis quadrifariam imbricatis, ramulis brevibus erectis congestis torulosis, drupis terminalibus subrotundis.

Habitat in Americâ Australi ad Caput Horn dictum. *Middleton.*

Frutex decumbens, ramosissimus. *Rami* assurgentes, teretes, cortice cinereo-fusco squamoso tecti. *Ramuli* breves, erecti, confertissimi, undique foliis imbricati, torulosi, flagellas referentes. *Folia* ovata, obtusa, appressa, quadrifariam imbricata, integerrima, coriacea, glabra, lævia. *Drupæ* subrotundæ, purpureæ, magnitudine et figurâ *Uvæ minoris*, in apice ramulorum solitariæ, sessiles, læves.

This new species of Juniper, was brought to this country together with many other specimens of new plants, by Mr. Middleton, who collected them in the neighbourhood of Cape Horn. These specimens were given to the late Mr. Forsyth of the Royal Gardens, Kensington, who obligingly presented some of them to me

CUPRESSUS TORULOSA.

BHOTAN CYPRESS.

C. Torulosa, foliis ovatis obtusis quadrifariam imbricatis, galbalis globosis: squamis umbonatis, ramulis teretibus torulosis divaricatis confertissimis patentibus.

Habitat in Indiâ Orientali (*Roxburgh*), in Bhotaniâ. *W. S. Webb.*

DESCRIPTIO.

Arbor pulchra, pyramidata, ramosissima, cortice brunneo deciduo tecta. *Rami* conferti, assurgentes. *Ramuli* confertissimi, teretes, divaricati, patentes, torulosi, 2-6-pollices longi, undique foliis crebrè imbricati. *Folia* minuta, ovata, obtusa, convexa, lævissima, opposita, undique appressa, quadrifariam imbricata, viridia; *adultiora* persistentia atque simùl cum cortice decidua. *Amenta mascula* nondùm nisi novella vidi; *hæ* in summo ramulorum minorum numerosa, clavata, tetragona, imbricata. *Galbali* globosi, pedicello brevissimo squamoso suffulti, picei coloris, rore glanco cœrulescentes: *squamis* trapeziformibus, medio umbonatis, crassis, lignosis.

CUPRESSUS NOOTKATENSIS.

NOOTKA CYPRESS.

C. Nootkatensis, ramulis tetragonis, foliis latè ovatis acutis dorso convexis quadrifariam imbricatis appressis, galbalis globosis subsessilibus: squamis umbonatis lævibus.

Habitat ad Sinum Nootka dictum, in Plagâ occidentali Americæ borealis. *Menzies.*

DESCRIPTIO.

Arbor.....: *Rami* teretes, patuli, foliis emarcidis squamati, cortice rufo tecti. *Ramuli* numerosi, subdistantes, tetragoni, breves, patuli. *Folia* latè ovata, acuta, valdè coriacea, glabra, nitida, arctè appressa, quadrifariam imbricata, dorso convexa; *adultiora* apice brevè subulata. *Galbali* globosi, laterales, magnitudine *Cerasi sylvestris*, rore glauco cœrulescentes, pedicello brevissimo squamoso ramulis simili suffulti: *squamis* trapeziformibus, petlatis, lævibus, centro umbonatis.

D.

B.

A.

C.

Thuja dolabrata.

Weddell Sc.

TAB. 1.

THUJA DOLOBRATA.

BROAD-LEAVED ARBOR VITÆ.

Thuja Dolobrata, ramulis ancipitibus, strobilis squarrosis, foliis latè ovatis obtusis trifariam imbricatis subtùs excavatis niveis.

Thuja dolobrata. *Linn. Suppl.* p. 420. *Thunb. Jap.* p. 266.
Willd. Sp. Pl. 4. p. 509.
Kwai. *Kæmpf. Amæn.* 884.

Habitat in Japoniâ, in regionibus Fakoniæ et Oygawæ, inter Miaco et Jedo. *Kæmpfer, Thunberg.*

Arbor altissima, vasta et pulcherrima. *Ramuli* numerosissimi, alterni, complanati, variè divisi. *Folia* trifariam imbricata, ovata, obtusa, crassa, quàm in cæteris speciebus plurimùm majora, suprà convexa, pulchrè viridia, lucida, medio sulcata, subtùs concava, marginata, nivea. *Strobili* squarrosi.

It is with much satisfaction that I have been enabled to give a plate of this highly interesting and little known species, which Thunberg justly describes as "Pulcherrima omnium Sempervirentium Arbor." Kæmpfer was the first European writer who makes mention of this tree; but his notice of it is so short, and being unaccompanied by a figure, it continued involved in obscurity until the return of Thunberg from his interesting voyage, shortly after which we find it described in the *Supplementum Plantarum*, by the younger Linnæus, under the name of *Thuja Dolobrata*, which alludes to the remarkable form of the leaves.

Mr. Lambert possesses a curious work published in Japan, giving an account of the plants of that country, and illustrated by a great number of figures, among which we find one of the *Thuja Dolobrata*. Fig. A. in our plate is an exact copy of this. The plate likewise comprises a figure of the specimen in the Banksian herbarium, for which I am indebted to the friendship of Mr. Brown, and lastly figures of those contained in Kæmpfer's herbarium at the British Museum. I cannot here omit noticing the facility which my friend, Mr. Konig, afforded in taking the drawing of Kæmpfer's specimens. The *Thuja Dolobrata* would prove a most desirable acquisition to our parks and lawns, if once introduced, as it is no doubt perfectly hardy.

EXPLANATION OF TAB. 1.

A. Copy of a Japanese drawing.
B. Figure taken from the specimen in Kæmpfer's herbarium at the British Museum.
C. Figure of another specimen from Kæmpfer's herbarium, shewing the underside of the leaves.
D. Ditto from the specimen preserved in the Banksian herbarium.

51. THUJA PENSILIS.

THUJA PENSILIS, foliis alternis trifariis trigonis subulatis, strobilis obovatis: squamis cuneatis tuberculosis, ramis filiformibus erectis.

Thuja pensilis. *Chinese Embassy*, p. 436.

Habitat in Chinâ. *Georgius Staunton.*

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52. THUJA PENDULA.

THUJA PENDULA, foliis decussato-oppositis patulis lanceolatis mucronulatis carinatis subdistantibus, strobilis globosis: squamis convexis lævibus, ramis filiformibus pendulis.

Habitat in Tartariâ.

DESCRIPTIO.

Arbor (viridario culta) orgyalis. *Rami* filiformes, directè ac pulcherrimè penduli, lætè virides.

Strobili globosi, magnitudine *Cerasi sylvestris*, 6-valves.

A plant of this beautiful new species is now growing in the conservatory at Boyton, and the only one perhaps in Europe. The plant was obtained from Messrs. Loddiges, at Hackney, who were informed it was a native of Tartary.

THUJA PLICATA.

NEE'S ARBOR VITÆ.

THUJA PLICATA, ramulis compressis patulis, foliis rhombeo-ovatis acutis appressis quadrifariam imbricatis nudis medio tuberculatis, strobilis oblongis nutantibus: squamis ellipticis obtusis planis.

Thuja plicata. *Donn Hort. Cantab. ed.* 6. *p.* 249.

Habitat in Nova-Hispaniâ. *(D. Clariss. Ludovicus Nee)*, in Plagâ occidentali Americæ borealis, ad Sinum Nootka dictum. *Menzies.*

DESCRIPTIO.

Arbor ramosissima, diffusa, lætè-virens. *Rami* patentes conferti, cortice rubro-fusco obducti. *Ramuli* densi, patuli, iterùm et iterùm divisi, pectinati, compressi. *Folia* rhombeo-ovata, acuta, arctè appressa, quadrifariam imbricata, approximata absque internodiis, glabra, integerrima, nitida, medio tuberculata. *Strobili* sparsi, solitarii, nutantes, oblongi: *squamis* ellipticis, obtusis, planis, obsoletè sulcatis.

THUJA CHILENSIS.

CHILI ARBOR VITÆ.

THUJA CHILENSIS, ramulis articulatis patulis compressis, foliis ovali-oblongis obtusis subtrigonis quadrifariam imbricatis appressis nudis utrinque sulcatis, strobilis ovali-oblongis: squamis ellipticis obtusis infra apicem tuberculatis.

Cupressus Thujoides. *Pavon MSS.*

Habitat in Andium Regni Chilensis montibus. *Ludovicus Nee, Pavon.*

DESCRIPTIO.

Arbor pulcherrima, cœrulescens, diffusa. *Rami* numerosi, patentissimi, cernui, cortice cinereo-fusco vestiti. *Ramuli* ad apices ramorum confertissimi, variè divisi, compressi, articulati. *Folia* ovali-oblonga, obtusa, subtrigona, quadrifariam imbricata, appressa, nuda, subdistantia, internodiis præsertìm in *adultioribus* distinctis, glabra, ad latus utroque sulco lato depresso dealbato exarata, basi arctissimè juncta, ramulos vaginantia. *Strobili* numerosi, terminales, ovali-oblongi, cernui, quadrivalves: *squamis* quatuor ellipticis obtusis, lævibus, extùs infra apicem tuberculo auctis.

PODOCARPUS SALIGNA.

WILLOW-LEAVED PODOCARPUS.

PODOCARPUS SALIGNA, foliis elongatis lineari-lanceolatis acutis glabris brevissimè petiolatis, drupis ovalibus pedunculatis axillaribus solitariis lævibus.

Habitat in Chili. *Pavon.*

DESCRIPTIO.

Arbor.... *Rami* numerosi, teretes, glabri, cortice fusco lævi tecti. *Folia* latè linearia, acuta, plana, coriacea, lævia, margine integerrima, utrinque glabra, lucidula, alterna nunc opposita, 3-uncialia, sesqui-lineam lata, ad medium nervo lato valido instructa, basi petiolo brevissimo suffulta. *Drupæ* ovales, læves, pedicello semi-unciali cylindraceo stipitatæ. *Spatha* tubulosa, lævis, limbo obliquo et integro.

PODOCARPUS OLEIFOLIA.

OLIVE-LEAVED PODOCARPUS.

PODOCARPUS OLEIFOLIA, foliis confertis lanceolatis acutis glabris margine deflexis, amentis masculis solitariis sessilibus.

Habitat in Chili. *Pavon.*

DESCRIPTIO.

Arbor frondosa. *Rami* conferti, foliosi, cortice luteo-fusco lævissimo vestiti. *Folia* lanceolata, acuta, integerrima, unam v. sesquipollicem longa, 2 v. 3 lineas lata, coriacea, utrinque glabra, uninervia, suprà ad nervum lineâ depressâ exarata, basi attenuata, margine parùm reflexa. *Amenta* mascula, solitaria, sessilia, cylindracea, uncialia, basi squamis pluribus imbricatis subrotundis munita: *antheris* brevissimis, cuneatis, subtùs duplici rimâ dehiscentibus, apice auctis appendice semi-orbiculari membranaceâ integerrimâ undulatâ. *Drupæ* ovales, solitariæ, lævissimæ, cernuæ. *Pedunculi* filiformes, glabri, semi-unciales. *Spatha* campanulata, è medio pedunculi ortum ducens, bivalvis, limbo bilobo.

PODOCARPUS GLOMERATA.

PODOCARPUS GLOMERATA, foliis lineari-lanceolatis acutissimis glabris, amentis masculis glomeratis, pedunculis oppositis.

Habitat in Chili. *Pavon.*

DESCRIPTIO.

Arbor. . . . . *Rami* numerosi, teretes, foliosi, cortice luteo-fusco lævi tecti. *Folia* lineari-lanceolata, acutissima, integerrima, plana, uninervia, alterna, conferta, basi subattenuata, utrinque glabra, lucida, pollicaria v. sesquipollicaria, unam v. sesqui-lineam lata. *Amenta* mascula, brevia, cylindracea, semiuncialia, semilineam crassa, plura (5-6) in glomerulis oppositis pedunculo filiformi glabro suffulta, basi squamis pluribus imbricatis munita. *Antheræ* parvæ, subrotundæ, angulosæ, apice appendice minutâ circumscriptione rotundatâ membranaceâ laceratâ auctæ.

PODOCARPUS NEREIFOLIA.

OLEANDER-LEAVED PODOCARPUS.

PODOCARPUS NEREIFOLIA, foliis lanceolatis acuminatis glabris margine reflexis, amentis masculis subternis folio quadruplò brevioribus.

Lignum Emanum. *Rumph. Amboin.* 3. *p.* 47. *t.* 26.

Habitat in Amboinæ regionibus Ema et Hitoe dictis, in altis saxosis montibus *(Rumphius)*, in Insulâ Principis Walliæ sic dictâ (*Evans*), in Nepaliâ, *Wallich.*

DESCRIPTIO.

Arbor procera, frondosa, trunco strictissimo lævi ulnam crasso aut sæpè ultrà. *Rami* numerosi, longi, foliosi, cortice rufo obducti. *Folia* lanceolata, acuminata, coriacea, integerrima, 4 v. 5 pollices longa, semi aut interdùm unciam lata, utrinque glabra, lucida, nervo convexo valido ad medium instructa, margine paulò

reflexa, basi acuta, brevissimè petiolata. *Amenta* mascula, numerosa, gemina v. terna, sessilia, pollicem longa, crassitie 2-linearia, erecta, obtusa, cylindracea, basi squamis numerosis subrotundis membranaceis margine scariosis imbricatè tecta. *Antheræ* creberrimæ, cuneato-subrotundæ, turgidæ, medio constrictæ, subtùs duplici rimâ hiantes, apice appendice minutâ membranaceâ laceratâ coronatæ. *Drupæ* ovoideæ, albicantes, pedunculo brevi cylindraceo suffultæ, cernuæ, solitariæ. *Spatha* campanulata, dimidii pedunculi longitudine, limbo obliquo, integro.

This plant was first known to me through a living plant imported by the late Mr. Evans of Stepney, from Prince of Wales's Island, where it is known by the name of Wax Dammer. I have received numerous specimens of the same plant from Nepal, through the kindness of Dr. Wallich, who rightly determined it to be the *Lignum Emanum* of Rumphius; but it is very distinct from the *Taxus macrophylla* of Thunberg, which he considered as the same species. Dr. Wallich informs me that the fruit of this tree is regarded as perfectly wholesome by the natives of Nepal. It is readily increased by cuttings; and there are now several young plants in our collections, raised from cuttings taken from a living plant, which Mr. Evans received with many others from Prince of Wales's Island. It is usually treated as a hot-house plant; but I am inclined to think it would be found to succeed best in the green-house.

PODOCARPUS MACROPHYLLA.

LONG-LEAVED PODOCARPUS.

PODOCARPUS MACROPHYLLA, foliis lineari-lanceolatis elongatis obtusis margine planis, amentis masculis quinis folio triplò brevioribus.

Taxus macrophylla. *Thunb. Japon. p.* 276.
Sin, vulgò Maki seu Fon Maki. *Kæmpf. Am. Exot. V. p.* 780. *ejusd. Icon. t.* 24.

Habitat in Japoniæ imperio copiosè, præsertim ad urbem Nagasacki.

DESCRIPTIO.

Arbor magna, frondosa, ramosissima. *Truncus* crassus, cortice cinereo-fusco vestitus. *Rami* conferti, assurgentes, supernè foliosi, infernè de lapsu foliorum nodosi. *Folia* alterna, lineari-lanceolata, obtusa, coriacea, glabra, stricta, suprà viridia, subtus pallidiora, utrinque costâ validâ convexâ, margine plana, basi in petiolo brevi attenuata, 2 v. 3 pollices longa, 3 lineas lata v. sæpè ultrà. *Amenta* plura (4-5), axillaria,

sessilia, cylindracea, pollicem longa, *præcedenti* duplò tenuiora, recta, basi squamis pluribus munita. *Antheræ* subrotundæ, turgidæ, subtùs duplici rimâ hiantes, apice appendice minutâ membranaceâ ovali obtusâ auctæ. *Drupa* ovoidea, viridis, glabra, magnitudine *Pisi majoris*, monosperma.

The specimens, which I possess, of this species were collected in the neighbourhood of the city of Nagasacki. These specimens, together with several hundred other Japanese plants, were taken in a Dutch prize during the last war. The name of the naturalist who collected them, I have never been able to ascertain. Of the wood of this tree, according to Thunberg, the Japanese form boxes and desks.

PODOCARPUS PUNGENS.

POINTED-LEAVED PODOCARPUS.

PODOCARPUS PUNGENS, foliis sparsis linearibus elongatis mucronatis margine incrassatis, drupis globosis.

Habitat in Novâ-Hollandiâ. *G. Caley.*

DESCRIPTIO.

Arbor. . . . . . *Rami* numerosi, teretes, recti, cortice cinereo lævi obducti, basi percurrente foliorum lineati. *Folia* sparsa, linearia, coriacea, mucronata, pungentia, glabra, suprà viridia, subtùs pallida, utrinque costâ validâ, margine incrassata, basi angustata, sesqui-v. bipollicaria, vix lineam lata. *Drupa* globosa, solitaria, axillaris, magnitudine *Pisi*, erecta, pedicello tereti lævi ultra-semiunciali sustentata. *Spatha* campanulata, limbo bilabiata, basi squamis duabus munita.

TAB. 7, Fig. 1.

TAXODIUM SEMPERVIRENS.

EVERGREEN TAXODIUM.

TAXODIUM. *Rich.*

CUPRESSI SP. *Linn.*

Flores monoici. Masc. *Amentum* cylindricum, laxè imbricatum: *squamis* membranaceis, rotundatis, apiculatis, basi intùs antheriferis. *Antheræ* didymæ, bivalves, rimâ transversali hiantes. Fœm. *Amentum* subrotundum: *ovulis* geminis. *Galbulus* globosus: squamis trapezoideis, crassissimis, fungosis, stipite triangulari longiusculâ ad rachin adnatis, peltatis. *Nuces* geminæ, oblongæ, trigonæ, ad latus superius stipitis affixæ, rachidi insertæ: *testa* crassa, ossea. *Semina* solitaria, pendula! *albumen* parcum, lacteum, membranaceum. *Embryo* teres, crassus, albus: *cotyledones* indivisæ, obtusæ, crassæ plano-convexæ: *radicula* crassa, teres, superior, cotyledonibus multò longior, obtusa, recta.

Arbores *(Amer. boreal.), proceræ, elegantes, facie Taxi.* Ramuli *pectinati, patuli.* Folia *disticha, linearia.* Amenta *mascula, numerosa, terminalia, spicato-racemosa;* fœmineis *subrotundis, terminalibus, solitariis.*

Taxodium sempervirens, foliis distichis linearibus acutis perennantibus coriaceis glabris opacis.

Habitat in Orâ occidentali Americæ borealis. *Menzies.*

DESCRIPTIO.

Arbor sempervirens. *Ramuli* angulati, foliosi, glabri. *Folia* linearia, acuta, disticha, coriacea, glabra, utrinque opaca, lucida, subtùs nervo medio carinata, margine plana, semi vel nunc ferè pollicem longa, semilineam lata, basi decursiva. *Galbuli* terminales solitarii, subrotundi, basi squamis brevibus imbricatis muniti: *squamis* trapezoideis, peltatis, crassis, fungoso-lignosis, suprà rugosis, atque radiatim striatis, centro-depressis, basi in pedicello crasso angulato desinentibus.

The great difference in habit existing between the *Cupressus disticha* of Linnæus and the other species referred by him to that genus, induced M. Richard* to form it into a separate genus, to which he gave the name of *Taxodium*. Two years afterwards Messrs. Mirbel and Schoubert described it under the name of *Schubertia*.† The very different habit of the trees themselves, the disposition of the male flowers, and the solitary pendulous seed, will readily distinguish this genus from *Cupressus*, to which most Botanists have hitherto referred it. On my way from the country last Autumn, in the beginning of November, I was fortunate in

* Annal. du Museum. XVI. p. 269.

† Nouv. Bull. dela Soc. Philom. III. p. 123.

Tab. I

Taxodium Sempervirens

Waddell Sc.

meeting with a single tree of *Taxodium distichum* bearing plenty of ripe fruit in the garden of a Blacksmith opposite the King's Arms, Bagshot. I was delighted with my discovery, as I had never before had the pleasure of meeting with this interesting tree with fruit on it, a circumstance of very rare occurrence in this country. The garden is the property of Mr. Rogers, Innkeeper, at Southampton. At the Parsonage in the vicinity of Bagshot there are two trees of the *Taxodium*, even larger than the one in the Blacksmith's garden, but on them I was able to find a single cone only. I am in possession of several native specimens with male flowers, collected by Mr. Nuttall on the banks of the Missouri, and others from Mexico sent me by M. Pavon. The North American and Mexican specimens appear to me to belong decidedly to one and the same species as Humboldt has already rightly determined. The generic description given above is exclusively formed from the *Taxodium distichum*, having had only a single imperfect specimen of the other species for examination. It is not without some hesitation, therefore, that I have referred it to *Taxodium*. I have thought the plant too interesting, however, to omit in the present work, leaving it to future observations to determine, whether or not the place which I have assigned to it be its true place. This plant, I propose to call *sempervirens*, from its evergreen leaves, so different from the *Taxodium distichum*, whose leaves are deciduous.

I have been enabled to give the accompanying figure of this interesting tree from a specimen obligingly communicated to me by my friend Mr. Menzies, who collected it on the north-west coast of America during his voyage on board the expedition of the celebrated Vancouver. The largest and finest trees of the *Taxodium distichum*, in this country, are those belonging to His Grace the Duke of Northumberland, at Sion-House.

TAB. 7. Fig. 2.

DACRYDIUM TAXIFOLIUM.

YEW-LEAVED DACRYDIUM.

DACRYDIUM TAXIFOLIUM, foliis distichis latè linearibus acutis falcatis margine deflexis basi obliquis utrinque opacis viridibus, amentis masculis drupisque in spicâ digestis.

Dacrydium taxifolium. *Solander MSS.*

Habitat in Novæ-Zealandiæ sylvis copiosè. *Banks, Solander, Menzies, Phillips.*

DESCRIPTIO.

Arbor procera, in uliginosis proveniens. *Truncus* crassus, strictissimus. *Rami* et *ramuli* numerosi, patentissimi, flexuosi, cortice rufo obducti. *Folia* distantia, duplici serie ordinata, patula, latè linearia, acuta ut plurimùm falcata, instar illis Taxi atque simùl colore opaco-viridi gaudentia, margine deflexa, basi obliquè inæqualia, pollicem longa, lineam aut nunc rariùs ultrà lata, petiolo brevissimo exili stipitata. *Amenta mascula* plura (10–20), distantia, sessilia, patula, in spicis lateralibus nunc terminalibus digesta, semiuncialia, oblonga, cylindracea, patula, crassitie bilinearia. *Drupæ* plures (4–7), spicatæ, subsessiles, ovales, mucrone brevi terminatæ.

I am in possession of several specimens of this tree, which, however, are without either catkins or fruit. These are only known to me from a drawing taken during the stay of Sir Joseph Banks and Dr. Solander in New Zealand in the first voyage of Captain Cook. This as well as the following species I have merely referred to *Dacrydium* from their appearing to me to be more akin to it, than to any of the other Coniferous genera hitherto published. I am well aware they cannot, with propriety, be associated with the *Dacrydium Cupressinum* of Solander, whose habit is totally different. I have no doubt that, on future examination, they will be found to constitute a distinct genus.

DACRYDIUM DISTICHUM.

DACRYDIUM DISTICHUM, foliis distichis linearibus mucronulatis glauco-viridibus patulis margine planis basi æqualibus.

Podocarpus taxifolia. *Kunth in Nov. Gen. et Sp. Plant. II. p. 2. t. 97?*

Habitat in Peruviæ Andibus. *Pavon.*

Arbor. . . . . *Rami* teretes, de lapsu foliorum tuberculosi, cortice gryseo vestiti. *Folia* sparsa, disticha, linearia, mucronulata, recta, patula, glauco-viridia, subtùs pallidiora, vix pollicem longa, semilineam lata margine plana, basi æqualia, brevissimè stipitata ad medium nervo validiori lineata. *Cætera* desiderantur.

Quercus Grandifolia.

J. Lindley Del.

Waddell Sculp

TAB. 8.

QUERCUS GRANDIFOLIA.

MAGNOLIA-LEAVED OAK.

QUERCUS GRANDIFOLIA, ramulis teretibus, glabris, foliis obovato-oblongis ellipticisve integerrimis subsessilibus utrinque nudis nitidisque basi auriculatis, fructibus terminalibus glomeratis, cupulis sessilibus rugosis, nucibus globosis mucronulatis.

Habitat in Nepaliæ nemoribus. *Wallich.*

Arbor esse maxima et frondosa judicatur. *Ramuli* crassi, rigidi, foliosi, cortice lævi fusco-plumbeo obducti. *Folia* ampla, sempervirentia, oblonga, obovata v. rariùs elliptica, spithamam v. sesquipedem longa, 4—8 pollices supra medium lata, ex basi auriculatâ et augustâ, versus apicem magìs et magìs dilatant, utrinque nuda nitidaque, intensè viridia, reticulato-venosa, subtùs costata, margine plana, integerrima, apice paulò acuminata, substantiâ licèt tenuia, sunt coriacea et non parvâ tenacitate prædita. *Petioli* brevissimi, crassi, semiteretes, suprà planiuscula et parùm canaliculata. *Fructus* in apice ramulorum numerosi et glomerati, sessiles. *Cupula* ampla, depressa, acetabuliformis, lignosa, crassissima, rachi firmè adnata, intùs fusca, plana, extùs maximè rugosa, cinerea: *orâ* crassâ, planiusculâ. *Nuces* magnæ globosæ, spadiceæ, nitidæ, mucronulatæ, paulò angulatæ, basi solummodò cupulâ cinctæ.

The species which compose the genus *Quercus* are for the most part trees of rugged aspect, and possessing little or no beauty whatever. This is not the case, however, with the magnificent species now before us. Its fine large green foliage (vying in this respect with the American Magnolias) and sessile glomerated fruit distinguish it from every other known species. The *Quercus grandifolia* is a native of the woods of Nepal, where it has been discovered by the collectors sent out by Dr. Wallich, to whom I am indebted for the fine branch represented in the plate. Dr. Hamilton does not appear to have met with it. We are already acquainted with ten species of Nepalese Oaks, besides the one here figured. Several of these, in point of beauty, far surpass those either of Europe or America.

TAB. 9.

PINUS LARICIO.

CORSICAN PINE.

Pinus Laricio, foliis geminis prælongis patentibus, vaginis subintegris, strobilis ovatis rectis subsolitariis: squamis depressis obsoletè 4-angulis. *Don, in Neill's Horticul. Tour*, p. 552.

Pinus Laricio. *Poir. in Lam. Encycl.* V. p. 339. *Lam. et Decand. Flor. Fran.* III. p. 274. *Duham. Arb. ed. alter.* p. 239, t. 71 *et* 67, f. 2.

Pinus sylvestris ε maritima. *Ait. Kew.* III. p. 366.

Habitat in insulæ Corsicæ montibus summis, in Phrygiæ Ida Monte. *P. B. Webb.*

Arbor altit. 56 ped., pulcherrima, pyramidata, ad apicem attenuata, cortice badio integro et epidermide deciduâ squamosâ tecta. *Rami* 8—10 in verticillis digesti, breviores et densiores quam *Pino sylvestri*. *Folia* gemina, numerosa, prælonga (6—7-uncialia), lenta, patentia, acicularia, semicylindracea, subtùs lucida, suprà canaliculata atque levitèr striata, margine scabrè serrulata, apice mucrone corneo instructa, colore jucundè viridi. *Vaginæ* foliorum unciales, subintegræ, argenteo-fuscæ, nitidæ. *Amenta mascula* in apice ramulorum terminalia, conferta, cylindracea, obtusa, unum v. sesquipollicem longa, patula, incurva, basi squamis pluribus scariosis spadiceis bracteata. *Antheræ* cuneato-oblongæ, angulatæ, biloculares, subtùs rimâ duplici longitudinali hiantes, apice cristâ subrotundâ convexâ membranaceâ margine eroso-repandâ auctæ. *Strobili* sessiles, ovati, horizontalitèr porrecti, subsolitarii: *squamis* induratis, ligneis, cinereo-fuscis, apice cuneatis depressis, obsoletè 4-angulis, spinâ umbonatâ minutâ durissimâ armatis. *Don in loc. cit.* (addenda descriptioni amenta mascula.)

In my former work I have confounded this with *Pinus maritima*, from which it is widely different; and as Table 9, given there as the male branch of *Pinus maritima*, belongs to the present species, I have been induced to give the plate here afresh, with the addition of two cones, in order the more fully to obviate the mistake. The preceding description, together with the following account, was taken by Mr. Don from two fine trees which he saw in the Jardin du Roi at Paris in 1821, and published in the Appendix to Mr. Neill's interesting Horticultural Tour through France and the Netherlands. Mr. Don's account is as follows:—

"This tree is totally distinct from all the varieties of *Pinus Sylvestrio;* with which, however, it in some respects agrees. The tree in the Arboretum on the buttes is thirty feet high, and three feet in circumference; and immediately beside it is growing *P. Sylvestris*, or, as Professor Thouin calls it, *P. Scotica*. The difference is at first sight very striking. *P. Laricio* is a much handsomer and finer tree, and is of a more pyramidal habit. Its branches are shorter and more regularly verticillate. Its leaves are a third longer, and of a lively green, with their sheaths nearly entire. Its cones are shorter, ovate, and quite

P.t Bauer delin.

Pinus Laricio.

E. Weddell, Sculp.

straight, with depressed scales; and its bark is finer and much more entire. The enlightened Professor of Agriculture informed us, that it is equally hardy with *P. Sylvestris*, and that its wood is much more weighty and resinous, and consequently more compact, stronger, and more flexible, than that of *P. Sylvestris*. It grows wild on the summits of the highest mountains in Corsica. It seems to bear cones very freely, which ripen nearly about the same time as those of *P. Sylvestris*. The tree from which the above description was taken, stands near the centre of the General Arrangement, was planted in 1784, and is now fifty-six feet high."

"I observed," says Mr. Hawkins, "on Cyllene, Taygetus, and the mountains of Thasos, a sort of Fir, which, although called Πευκος by the inhabitants, and much resembling the Πευκος of the lower regions, differed from it in these particulars: the foliage was much darker, and the growth of the tree much more regular and straight. The very elevated region on which it grew leads me to suspect it must be different from the common Πευκος." *(Walpole's Memoirs relative to Turkey,* &c. p. 236.) The *Pinus Laricio* is, I have no doubt, the tree here mentioned, and especially as it is known to grow in Greece, and has been found by Mr. Webb near the summit of Mount Ida, in Phrygia.

The branch represented in the plate is taken from a tree of this species growing in the Royal Gardens at Kew.

EXPLANATION OF TABLE 9.

A. Male catkin magnified.
B.B. Antheræ.
C.C. Points of leaves magnified.
D.D. Cones.

TAB. 10.

PINUS MARITIMA.

MARITIME PINE.

Pinus maritima, foliis geminis tenuissimis, strobilis ovato-conicis glaberrimis solitariis pedunculatis.

Habitat in Europæ Australis maritimis. Floret Junio.

Arbor 20-pedalis, ramosissima. *Folia* biuncialia, vel parùm longiora, angustissima, vaginâ brevissimâ. *Strobili* solitarii, pedunculati, cernui, ovati, superficie æquales, lævissimi ac nitidi. *Seminum* ala magna, securiformis.

The figure in the 10th Plate, representing the above species, was drawn from a specimen in the Sherardian Herbarium, to which the following note is annexed:—

P. maritima foliis tenuissimis, conis albicantibus, brevibus, deorsum reflexis, in superficie æqualibus. *Michel.*
Pinastri alterum genus parvum, in maritimis, foliis capillamenti modo tenuissimis. *C. Iso*^{t}.
P. maritima, conis cinereis, planis. *Phytopin.*

This tree, so far as I can judge from one growing at Sion House, the only one I have been able to find, grows to the height of about twenty feet. The branches are very numerous, and bear long filiform leaves, resembling those of *P. halepensis*, which are more closely connected towards the extremities of the branches. The cones are of nearly the same size as in *P. rigida*, but rather smaller. They are so remarkably smooth and glossy, that they at once distinguish this species. Those which appear on Sherard's specimen hang downwards; but those which I obtained at Sion House point upwards: one of the latter is represented in the plate. In shedding their seeds, they seem to expand very little.

The following curious particulars relating to the *Pinus maritima* are extracted from Dr. Sibthorp's Papers, and published in Walpole's interesting Memoirs:—"Πεύκος, one of the most useful trees in Greece; it furnishes a resin (ῥητίνη), tar, and pitch (πίσσα), all of considerable importance for œconomical purposes. Throughout Attica the wine is preserved from becoming acid by the means of the resin which is employed, in the proportion of an oke and half to twenty okes of wine. The tar and pitch for Shipbuilding are taken from this tree and the Πίτυς, the *Pinus Pinea*. The resinous parts of the wood of the Πεύκος are cut into small pieces, and serve for candles, called δᾴδια. The cones, κοῦνοι, are sometimes put into the wine barrels. The bark is used in tanning hides. The wood is much employed by the carpenters in building."

Sir James Edward Smith informs me, that several young plants of this species were raised in this country in the year 1821.

EXPLANATION OF TABLE 10.

A. Cones from the Sherardian Herbarium.
B.B. Scales of the same, with the seeds.
C. Separate Seed.
D. Leaves.
E. Point of a Leaf.
F. Cone from a tree in Sion Gardens.
G. Cone collected in Greece by the Honourable William Fox Strangways, and added to the plate.

Pinus maritima

F Bauer. Del.

EXTRACT

FROM A LETTER TO THE LATE J. STACKHOUSE, ESQ.

BY MR. HAWKINS.

" You encourage me by what you say on this genus to communicate a few more of my observations.

" I have already informed you that the Ελατος (Pinus Picea) occurs on all the high mountains of Greece, viz. Olympus, Pindus, Parnassus, Helicon, Cithæron, Cyllene, Mænalus, Taÿgetus, &c. &c. and in their upper region only serving as a sort of barometer, to mark their relative height, and growing invariably on a calcareous rock, or, to speak more accurately, on a fine hazel mould which covers this rock. Of these forests the lowest line of elevation I judge to be about 3000 feet.

" I have already noticed a species of Fir, much resembling the Πευκος, and known among the Greeks under the same name, which I found covering the mountains of Thasos, and forming pretty extensive forests on Taÿgetus, Cyllene and Pindus. This tree has, I believe, escaped the notice of Dr. Sibthorp, but the following are my reasons for thinking it a distinct species. First, its more *sombre* colour; that of the true Πευκος being a very pleasing and lively green. Secondly, a much straighter growth, and a more regular ramification than that of the true Πευκος, resembling in these characters the Pinus Sylvestris. Thirdly, a much more elevated *habitat;* this being next in succession to that of the Ελατος, or Silver Fir.

" The Πευκος is perhaps the most common tree of Greece, and it constitutes very extensive forests in Elis, and the contiguous districts of Arcadia. There it finds a soil perfectly congenial to it, i. e. a stratified, more or less indurated, sandstone, in which it attains a size fit for all the purposes of ship-building, and even sufficiently large for the construction of ships of war. Accordingly, it is there only that an adequate idea can be formed of the picturesque beauty of this tree, for in other situations and soils, its growth is comparatively insignificant, and particularly so in Attica. We found it growing on the mountains of Cyprus, and occasionally on those of Crete.

" The fourth species of this genus, which occurs in Greece, is the Κεφαναρι, our Stone Pine, the locality of which is very remarkable, for it grows here and there in a narrow belt along the sandy shores of Elis and Epirus, and within the reach of the salt spray. I found it however not exclusively in such situations, for in Triphylia, i. e. the district on the south of the Alpheus, there is a forest of this tree which is above a mile in breadth, and is bounded inland by another of the Πευκος with which it intermixes. But even in the most favourable situations, the Stone Pine attains not one half of the height of the Pefkos (Πευκος) although its timber, in other respects, is thought to be equally as good for ship-building, and the quality of both is greatly superior in closeness of grain, toughness, and durability, to that of our Pinus Sylvestris. Of these two sorts of timber are all the planks used in the construction of the Greek vessels, while the ribs are composed of the Quercus Coccifera (Πριναρι) or Œgilops, and the masts either of Thasian Fir or of the Spruce or Silver Fir from Fiume.

" The plank timber of the Πευκος is said to possess a greater pliability without being boiled, than even the oak; and the knots in it, do not start, as in the common deal.

" Pitch and turpentine are extracted in every part of Greece from the Πευκος. The splinters are used for candles, and retain the old name of Δαδι.

" Plutarch says that the Πιτυς and her sister trees (αδελφα δενδρα) πεῦκαι και ῥεμβιλοι are the best for ship-building. The Πιτυς he observes grows εν αργιλωδεοις τόποις in a clayey soil. Mountainous districts, he adds, exposed to the wind and covered with snow, produce Πεῦκας και ῥομβίλους. Πιτυς is termed by him καρπιμος which can be applied to no other species than the Stone Pine, and this opinion is supported by Coray.

TAB. 12.

MACLURA AURANTIACA.

OSAGE ORANGE OR BOW-WOOD.

MACLURA. *Nutt.*

MORI SP. *Auct.*

Flores dioici. Masc. *Amentum* oblongum. *Calyx* 4-partitus. *Petala* nulla. *Stamina* 4. Fœm. *Amenta* globosa. *Calyx* minimus, urceolatus. *Styli* elongati, filiformes, villosi, singulis acinis singuli. *Bacca* acinis confluentibus composita, multilocularis: *loculis* monospermis.

Arbores *Americanæ lactifluæ.* Folia *alterna, integerrima v. serrata, petiolata.* Stipulæ *binæ. ciliatæ.* Spinæ *(Pedunculi abortivi) solitariæ, supra-axillares.* Flores *axillares.* Bacca *magna, succulenta.*

I. Maclura Aurantiaca, foliis ovalibus acuminatis integerrimis, stipulis minimis subpersistentibus.

Maclura aurantiaca. *Nutt. Gen. Amer.* 2, *p.* 234.

Habitat in Americæ borealis territorio Missouriense, ad ripas fluviorum, et præsertim ad Arkansa flumen. *Hunter, Nuttall.* ♄.

DESCRIPTIO.

Arbor ramosissima, patens, 30-60 pedes alta. *Ramuli* flexuosi, teretes, glabri. *Folia* ovalia, acuminata, integerrima, petiolata, 3-4 pollices longa, sesqui v. biunciam lata, lætè viridia; *adultiora* utrinque, nisi ad venas, glabra; *juniora* pubescentia. *Petioli* angusti, compressi, subvillosi, semiunciales. *Spinæ* axillares, solitariæ, erecto-patulæ, subulatæ, rigidæ, 2-3 lineas longæ. *Flores masculi* parvi, albo-virentes; *fœminei* in amentum sphæricum magnitudine *Buddlejæ globosæ.* *Styli* longi, villosi. *Bacca* carnosa, pedunculosa, magnitudine *Citri decumanæ*, lutescens, sapida. *Semina* obovata, compressa.

Besides the interesting species now described, *Maclura* will include the *Morus Tinctoria* of Linnæus, and two new species, natives of Mexico. The former, Mr. Nuttall, who, I believe, had never seen specimens of it, is inclined to think belongs to a different genus; but having myself examined carefully several specimens I have been induced to refer it to this genus. The two Mexican species approach still nearer to the *Maclura*

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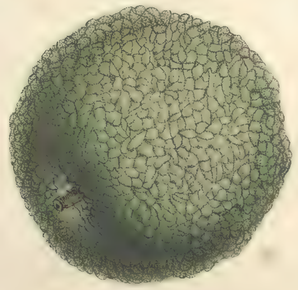
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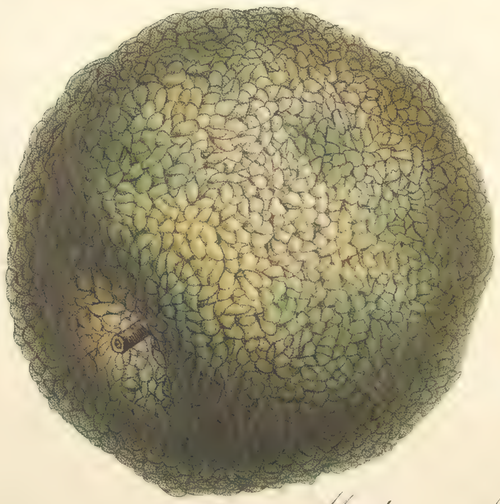
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Maclura Aurantiaca.

Weddell Sculp.

Aurantiaca, both in habit and characters. Mr. Nuttall has overlooked the stipules, which are certainly present in *M. Aurantiaca*, although they are very small. This interesting tree was first introduced into the Gardens at St. Louis, Mississippi, from a tree transplanted from the village of the Osage Indians, and from seeds obtained from that tree, plants were raised in the nursery of Mr. M'Mahon of Philadelphia, and thence introduced to this country by Lord Bagot, from seeds received from the celebrated Naturalist, Mr. Correa de Serra, then Ambassador of Portugal to the United States. The trees at Philadelphia have reached their full size, and produce fruit annually. Lord Bagot possesses two fine trees of it, which he keeps in his conservatory. Mr. Nuttall, who was very lately in this country, informed me, that it bears the winters of Philadelphia without injury. It will consequently readily endure our winters in the open air, a circumstance that will render it a still more valuable acquisition to the gardens of this country. Lord Bagot was so good as to give me plants of it, which are now growing at Boyton.

I subjoin the following extract relating to this tree from " Mr. James's interesting *account of the Expedition to the Rocky Mountains.*"

" Maclura Aurantiaca of Nuttall.---A description of this interesting tree may be seen in Mr. Nuttall's valuable work, on the Genera of North American Plants, page 233, vol. ii. That description was drawn from specimens cultivated in the garden of Mr. Choteau, at St. Louis, where, as might be expected, the tree did not attain its full size and perfect character. In its native wilds the Maclura is conspicuous by its showy fruit, in size and external appearance resembling the largest oranges.

" The leaves are of an oval form, with an undivided margin, and the upper surface of a smooth shining green; they are five or six inches long, and from two to three wide. The wood is of a yellowish colour, uncommonly fine and elastic, affording the material most used for bows by all the savages from the Mississippi to the Rocky Mountains. How far towards the North its use extends, we have not been informed, but we have often seen it among the lower tribes of the Missouri, who procure it in trade from the Osages, and the Pawnees of Red River. The bark, fruit, &c. when wounded, discharges a copious milky sap, which soon dries on exposure, and is insoluble in water, containing, probably, like the milky juices of many of the *Urticeæ*, a large intermixture of coatchouc or gum elastic. Observing this property in the milky juice of the fruit, we were tempted to apply it to our skin, where it formed a thin and flexible varnish, affording us, as we thought, some protection from the ticks.

" The fruit consists of radiating, somewhat woody fibres, terminating in a tuberculated and slightly papillose surface. In this fibrous mass, the seeds, which are nearly as large as those of a quince, are disseminated. We cannot pretend to say what part of the fruit has been described, as the " pulp which is nearly as succulent as that of an orange, sweetish and perhaps agreeable when fully ripe." In our opinion the whole of it is as disagreeable to the taste, and as unfit to be eaten, as the fruit of the sycamore, to which it has almost as much resemblance as to the orange.

" The tree rises to the height of twenty-five or thirty feet, dividing near the ground into a number of long slender, and flexuous branches. It inhabits deep and fertile soils along the river valley. The Arkansa appears to be the northern limit of the range of the Maclura, and neither on that river nor on the Canadian, does the tree, or the fruits, attain so considerable a size as in warmer latitudes. Of many specimens of the fruit examined by Major Long, at the time of his visit to Red River, in 1817, several were found measuring five and a half inches in diameter."

The following is a Letter from Nr. Nuttall, dated Liverpool, April 12, 1824, containing much valuable information relative to this tree.

" I have herewith sent you, the drawings of the Maclura, and have but little to add concerning it besides what is already before the public. I have, however, since that publication seen the *male flowers* with which I had been unacquainted. They are produced in partly sessile clusters, probably twelve or more together in a very short raceme, and consist each of a four-parted greenish calix including three but more commonly four stamens about the length or a little exceeding that of the calix.

" The trees often attain the height of 60-feet or upwards, having very spreading branches thickly clothed with a foliage of the most vivid and shining green. The flowers are very inconspicuous and nearly green

or with a slight tinge of yellow. The bark and fruit, on incision, gives out a milky sap; that of the fruit aromatic, but not agreeable to the taste. Although found spontaneous and abundant on the immediate borders of Red River, I cannot learn that any individual has ever seen or tasted its ripe fruit. These, according to the report of Major Long (v. his Narrative, 2. p. 158.), are quite as large as those of the Shaddock Tree, yellow, and very beautiful to the eye, but in his opinion always unpleasant to the taste. As to their being juiceless, (an assertion made by this Narrator), the very name of Osage *Orange*, independent of my own testimony, ought to have qualified the contradiction.

" From two or three of the fruit which I described, as seen growing in Mr. Choteau's garden at St. Louis, in 1810, I expressed about half a pint of a milky sweetish fluid, which, unlike most lactescent saps, quickly separated into a clear liquid and a subsiding feculent matter, almost appearing like the action of coagulation in milk. I mention this fact, merely to show that the fruit is not *hard and dry*, as stated by Mr. James. Indeed from all I can yet learn, the state of the ripe fruit is entirely unknown.

" The wood is so completely like that of the Fustick *(Morus Tinctoria)* that it would be difficult to tell them apart; it is equally useful as a yellow die, and its strength recommends it to the natives for bows.

" North of Red River I have never seen it, except in one locality 12 miles south of Fort Smith on the Arkansa."

EXPLANATION OF TAB. 12.

A. A. Branches.
B. Portion of a Branch with the Female Catkin.
C. Male Flowers.
D. D. Male Flowers, separate.
E. Young Fruit.
F. Section of the same, shewing the disposition of the Seeds.
G. A full grown Fruit.

APPENDIX

BY Mr. DON,

COMPRISING AN ACCOUNT OF THE

LAMBERTIAN HERBARIUM.

The Lambertian Herbarium is arranged according to the Linnæan System, in cabinets, after the excellent plan of the Banksian Herbarium. Each species is glued on a single half sheet of stout folio writing paper. The species are then placed in a whole sheet of the same paper, on which is written the name of the *genus*, as well as the number corresponding with the general Index of the Herbarium.

In regard to the trivial name, reference is always made to the latest edition of the *Species Plantarum*, and such as are not contained in that work, are referred to the authors who first described them.

This collection has, at different times, been enriched by the contributions of men eminent for science: the Proprietor has spared neither pains nor expense to render it as complete as possible; and the whole cannot be estimated at less than thirty thousand species, among which are several thousands yet unpublished.

In consequence of the arrangement already mentioned, any new accession is necessarily separated as soon as received; and the specimens put in those respective departments in the Herbarium which their classification assigns to them: but the following are the chief sources from whence the collection has been formed:--

1. Mr. Lambert's own Herbarium of indigenous plants found in England and Ireland.

2. A collection of specimens purchased at the sale of the Duchess of Portland's Museum; this included some interesting Cape plants and other exotics.

3. A large collection of plants collected at the Cape, Madeira, and Teneriffe, by Mons. Labillardiere: these were taken by an English ship of war, in 1798, and purchased by Mr. Lambert.

4. All that part of the Herbarium of the celebrated Mr. Hudson, which contained his *Cryptogamia:* this was purchased by Mr. Lambert, and formed an extensive collection of indigenous and exotic Lichens, Mosses, and Fuci, but unarranged: also some other scarce indigenous plants collected by Hudson in his last journey to the West of England, and a parcel of the seeds of *Vella annua*, which he was said to have found near Stonehenge.

5. The greater part of the Earl of Bute's collection of Swiss plants, purchased at the sale of his library. This collection was made by M. Garcin, and contained fine specimens of most of the plants of Switzerland, with many duplicates.

6. Browne, author of the Natural History of Jamaica, gave all the plants he had found in Ireland, but chiefly in the Counties of Mayo and Galway. He also presented to Mr. Lambert, a *MS. Flora Hibernica*, which is now in the possession of the Linnean Society, and likewise a *Flora Indiæ Occidentalis*, which he had begun. It formed a thin quarto volume. This last Mr. Lambert presented to the President of the Linnean Society, Sir James Edward Smith.

7. Masson gave duplicates of most of the plants collected by him in Southern Africa, and other parts.

8. The entire Herbarium of George Forster collected during Cook's circumnavigation, and from which he published his *Florula* of South Sea plants.---This choice collection was purchased of his father-in-law, Professor Heyne of Gottingen.

9. From M. De Ponthieu, who was some years collecting plants in the West India Islands, and who is so often quoted in Swartz's *Flora Ind. Occident.*, was purchased a rich collection of specimens, and his library of Botanical Books full of MS. notes on the plants of those islands.

10. From Mr. Forsyth of Kensington, a large collection of specimens sent him by Mr. Alexander Anderson, of St. Vincent's, and a few from Cayenne. Mr. Anderson also, who was Curator of the Botanic Garden at St. Vincent for 30 years, sent Mr. Lambert many fine specimens, and at his death left him his drawings of plants cultivated in that garden. These drawings are now in the possession of the Linnean Society.

11. Many fine specimens, and some living plants from Dr. Dancer of Jamaica, and Mr. Brown, a surgeon there. Also the whole of Dr. Dancer's Herbarium purchased of his widow after his death.

12. Several hundred living plants brought home by Lord Seaforth, on his return from his government of Barbadoes, and presented to Mr. Lambert: many of these flowered in the stove at Boyton, and were added to the Herbarium.

13. Many specimens purchased of Mr. W. Fraser, of Chelsea, who had been several times to America in search of rare plants.

14. Mons. Broussonet, French Consul at Teneriffe, and well known for his work on Fishes, gave a choice collection of specimens, made during his stay in that Island.

15. Mons. Durand, an intimate friend of Broussonet, who resided several years at Gibraltar and Algiers to collect plants, sent specimens of all he was able to find: these were well preserved, and many of them new. Several are described and figured in Desfontaines' *Flora Atlantica*.

16. A very large Herbarium of plants growing in New South Wales, purchased of Dr. White, author of an account of that colony, and who resided there seven years. This was divided with Sir J. E. Smith.

17. Governor Phillip contributed the duplicates of his collection in New South Wales; with many interesting specimens from New Zealand.

18. Mons. Labillardiere presented some specimens found in Van Diemen's Land, and many duplicates of his New Holland plants, collected during the voyage in search of La Perouse.

19. The celebrated Professor Cavanilles sent many specimens of Spanish plants, and a collection from South America; with a large parcel of seeds from the Royal Gardens at Madrid.

20. Sir G. L. Staunton gave duplicates of all the specimens collected during the Embassy to China. These included many very interesting plants: many of those of Osbeck; and many collected at Rio Janeiro, St. Jago, Teneriffe, Madrid, St. Helena, &c.

21. Mr. Archibald Menzies, who circumnavigated the globe with Capt. Vancouver in search of plants, presented duplicates of a great part of the specimens collected in that voyage. Among them are some very interesting plants from the neighbourhood of Cape Horn.

22. A very considerable Herbarium, part of that superb collection of Natural History which was consigned, by order of the French Government, from Cayenne to the National Museum at Paris, and captured by two British privateers in 1803. Of this one half was purchased by Mr. Lambert, containing several duplicates of each species in the whole collection.

23. The very extensive Herbarium of the celebrated Professor Pallas collected in the various provinces of the Russian empire, which was purchased at Petersburgh during the tyrannical reign of Paul I. by Mr. Cripps, companion of the late Dr. Clarke, and by him resold to Mr. Lambert. This collection contains a great number of species yet undescribed: also all the plants figured in Gmelin's *Flora Siberica*, and the identical specimens from which the figures in *Flora Rossica* were taken. Some of the genera, as *Astragalus*, *Onosma*, *Saxifraga*, *Pedicularis*, and *Potentilla*, are very rich in species. The genus *Astragalus* contains fine specimens with several duplicates of each of the species described and figured in Pallas's *Monograph*. This Herbarium contains all the specimens collected by the Assistant and Pupils of the Professor, in their Travels through the different provinces of the Russian Empire: those collected by Gmelin, Georgi, Steller, by Dr. Merk in Billing's Expedition, and by Samuel Gottlieb Gmelin, in the Northern Provinces of Persia. It likewise comprises numerous specimens from Thunberg, the late Sir Joseph Banks, and other distinguished Naturalists; and a duplicate collection of the plants gathered by George Forster in "Cook's Second Voyage," which even contains many finer specimens than those in his own Herbarium also in Mr. Lambert's possession.

24. Dr. Roxburgh enriched this Herbarium with numerous large collections, made in continental India, and in Banda, Amboyna, and other islands of the Indian Archipelago. These amounted to several thousand species; and among them were several species of the *Nutmeg*. Dr. Roxburgh likewise sent all the specimens and seeds collected by him at the Cape of Good Hope, where he resided a twelvemonth.

25. Mr. John Roxburgh, who resided at the Cape four or five years for the purpose of collecting plants, sent also several very large collections of specimens, well preserved, and particularly rich in the genera *Erica*, *Brunia*, *Diosma*, *Phylica*, *Borbonia*, *Hermannia*, *Aspalathus*, *Mahernia*, &c.

26. Dr. Adam Afzelius, a distinguished naturalist, and now Demonstrator of Botany in the University of Upsal, divided with Mr. Lambert an ample collection of specimens made during several years residence in the British settlement of Sierra Leone.

27. From Governor King was received a fine collection of New Holland specimens.

28. From Mr. Caley was purchased part of the extensive Herbarium formed by him during several years residence in new Holland. This was a valuable addition, many genera as *Daviesia*, *Gnaphalium*, *Pultenæa*, *Pleurandra*, *Hibbertia*, &c. being particularly rich: the genus *Eucalyptus* alone contains upwards of 50 species.

29. Dr. Francis Hamilton, (formerly Buchanan,) so justly celebrated as a traveller and naturalist, liberally pre-

sented part of the fine collection of specimens made during his residence in that highly interesting country Nepal, in 1802–3; with many others found by him in Mysore, Cannara, Malabar, &c.

30. Dr. Wallich, the indefatigable superintendant of the Botanic Garden at Calcutta, has enriched the Herbarium with many valuable collections from Nepal and various parts of India, as well as from the Calcutta Garden.

The Nepal collections, including both those sent by Dr. Hamilton and Dr. Wallich, may be estimated at about 1500 species, the greater part of which are entirely new: they are, however, referable to well known, and chiefly European genera. No exact statement can be given of the proportions which the Monocotyledones and the Dicotyledones bear to each other; as our knowledge of some of the orders belonging to the former class, such as the *Gramineæ* and *Cyperaceæ*, which no doubt must abound in these regions, is still very scanty. The following are the number of species in some of the natural orders, and genera.

NATURAL ORDERS.	GENERA.
Monocotyledones.	Boehmeria, 7.
Filices, 38.	Procris, 4.
Lycopodineæ, 4.	Pinus, 5.
Piperaceæ, 4.	Quercus, 11.
Orchideæ, 40.	Euphorbia, 4.
	Daphne, 4.
Dicotyledones.	Polygonum, 14.
Urticeæ, 13.	Begonia, 6.
Laurinæ, 9.	Primula, 7.
Primulaceæ, 17.	Androsace, 3.
Labiatæ, 30.	Pedicularis, 4.
Compositæ, 47.	Gentiana, 5.
Umbelliferæ, 12.	Jasminum, 7.
Cruciferæ, 7.	Rhododendron, 4.
Saxifrageæ, 7.	Osbeckia, 4.
Melastomaceæ, 7.	Saxifraga, 4.
Rosaceæ, 39.	Berberis, 4.
	Viola, 6.
	Impatiens, 4.
	Passiflora, 1.
	Hypericum, 6.
	Anemone, 4.
	Potentilla, 8.
	Rubus, 10.
	Spiræa, 3.

31. From Mr. Wiles, a collector in Jamaica, were obtained about 800 fine specimens, the production of that Island, with many Ferns from the Blue Mountains.

32. Mr. Frederick Pursh, author of the *Flora of North America*, formed an extensive Herbarium during 12 years' residence and travels in the United States. This collection, which comprehends the greater part

of the plants described in his *Flora*, was purchased, and made a valuable addition to the Lambertian Herbarium. Mr. Pursh afterwards went to Canada, and made a very complete collection of the plants of that country, and had arranged materials for a *Flora Canadensis*, the publication of which his premature death prevented.—This collection also was purchased of his widow: it consists of about 1000 species, of which 60 are undescribed, 180 are Monocotyledones, and 820 Dicotyledones. It should be observed, that from Mr. Pursh's North American Flora, 50 at least must be deducted, as spurious species.

33. Mr. Brown, the distinguished naturalist, who accompanied the expedition of Captain Flinders to survey the Coast of New Holland, has enriched the Lambertian Herbarium with many specimens, collected in that memorable Voyage, especially of the plants belonging to the curious family of the *Proteaceæ*.

34. The late Dr. Baldwin of Wilmington, Savannah, contributed many rare and new plants collected in Georgia, Carolina, and Florida.

35. The late Dr. Clarke, and his fellow-traveller Mr. Cripps, presented the whole collection of dried plants gathered during their travels in the Ottoman empire, and the southern provinces of Russia.

36. Captain King, son of the late Governor King, who was employed by Government to survey the N. W. coast of New Holland, presented a very choice collection of specimens made during that expedition.

37. Dr. Sims very obligingly presented part of a fine collection of dried plants which were sent him by Mr. Sello; a gentleman in the service of the King of Prussia, and who is at present engaged in the Brazils, collecting subjects in every department of Natural History.

38. A collection of Japanese plants, consisting of upwards of 300 species, with duplicates of most of the species; among them are several species of *Viburnum*. In this collection are many plants described by Thunberg in *Flora Japonica*. These specimens were collected by a Dutch Surgeon in the neighbourhood of Nagasaki, and being taken in a Dutch prize came into Mr. Lambert's possession by purchase.

39. From Dr. Sieber of Prague, was purchased his large Herbarium of plants collected in Crete, Egypt, and Palestine, to the number of about 800, among which are many new ones. These have been all carefully named by Dr. Sieber.

40. The late Dr. William Jack, who was attached to the Suite of Sir Stamford Raffles, Governor of Sumatra, has sent all the specimens described in the first Volume of the "Malay Miscellanies:" among which are three splendid species of that most remarkable genus of plants, *Nepenthes*.

41. The extensive collection made in the Isle of France, by the celebrated traveller Michaux, who died in Madagascar, was given by a Frenchman to Dr. Wallich, and by him presented to Mr. Lambert.

The other sources from whence this Herbarium has been enriched by many new or rich species, are Seeds received from correspondents in various parts abroad; which having been brought to perfection in the Stove and Garden at Boyton, the plants have been afterwards dried and preserved.

The public nurseries of Messrs. Lee and Kennedy, Loddiges, Woodfords, &c. have contributed many valuable specimens: also the Royal Gardens at Kew, the Chelsea Gardens, the Brompton Gardens, the Botanic Garden at Cambridge, and the one formerly conducted at Bath by Mr. Sole: Mr. Swainson's Garden at Twickenham supplied many specimens of hardy Exotics; as did that of Lady De Clifford at Paddington, of Tropical and New South Wales plants; and that of Mr. Vere at Kensington Gore. The Duke of Marlborough's garden at White Knights furnished many fine specimens of rare plants, especially North American trees and shrubs; that of George Hibbert, Esq. at Clapham, many of the rarer *Ericas*, *Proteas*, &c. and that of Sir Abraham Hume, at Wormley-bury, has contributed several very rare specimens.

42. George Hibbert, Esq. presented to Mr. Lambert the greater part of his Herbarium, which comprised the whole of Niven's Cape Collection and Dr. Wright's Jamaica Plants, with many others. A great part of the Jamaica specimens Mr. Lambert had before received from Dr. Wright himself.

43. Herbarium of Ruiz and Pavon. This extensive collection, made at the expense of the Spanish Government, contains, besides the whole Herbarium formed by the Authors of the *Flora Peruviana* during their residence of eleven years in Peru and Chili, nearly 2000 Mexican plants, and a valuable assortment of those indigenous to Spain. A considerable addition to the Mexican portion of the Herbarium has been received since Mr. Lambert's notice of this collection has been published.* The number of species nearly doubles that of the Herbarium formed by Humboldt and Bonpland during their travels in Equinoctial America, and of which the greatest part has already been described, and published, by a very distinguished botanist, Professor Kunth. The great difference in the proportions of these two collections is very remarkable, and is only to be accounted for in this manner; that, although Humboldt and Bonpland visited many more countries than our Spanish botanists did, the short stay they necessarily had to make, enabled them to glean a scanty portion only of the vegetable riches which Nature diffuses, at every step, to the naturalist, in those vast countries of Tropical America, which have been so ably and so beautifully described by Humboldt. From the excellent descriptions and figures given by M. Kunth in the "*Nova Genera et Species Plantarum*" I have been enabled to make out nearly the whole of the species, which accord with those he has described in that work. Nearly one half of the species contained in the Herbarium, however, I conceive to be new, and hitherto unpublished. In the following statement will be found the Genera, which have yet been determined, disposed according to the Natural System, with the number of Species contained in each. The Mexican collection appears to me, from the many specimens from California, Unalaska, &c. to have formed a part of the Herbarium of Mocino and Sesse, who were many years engaged, at the expense of the Spanish Government, in investigating the vegetable productions of the Vice-Royalty of New Spain, with the design of publishing a *Flora Mexicana*. There is a separate carpological collection, containing fruits and seeds of the more interesting plants contained in the Herbarium. The specimens are in excellent preservation, and, in most instances, several duplicates of each species in different states. Having already determined the greater part of the species, a complete Flora, containing descriptions of the whole, with figures of the more remarkable ones, may be expected.

MONOCOTYLEDONES.

Filices 208. *Lycopodiaceæ* 23. *Equisetaceæ* 3. *Gramineæ* 108. *Cyperaceæ* 60. *Junceæ* 7. *Restiaceæ*, Xyris 2. Eriocaulon 3. *Irideæ*, Cipura 1, Moræa 1, Sisyrinchium 28, Tigridia 3. *Commelineæ*, Commelina 8, Aneilema 2, Tradescantia 4, Callisia 2. *Asphodeleæ*, Anthericum 2, Conanthera 1, Ornithogalum 1, Allium 1, Lilæa 1. *Amaryllideæ*, Amaryllis 4, Chlidanthus 1, Pancratium 3, Genus Calostemati affine 1. *Liliaceæ*, Fritillaria 1, Agave 1, Alstrœmeria 14. *Bromeliaceæ*, Tillandsia 8, Bromelia 1, Pitcairnia 4, Pourrettia 2, Æchmea 1, Bonapartea 2, Genus Novum 1. *Palmeæ*, Nunnezharia 1, Elais 1, Martinezia 4, Iriartia 1, Morenia 1. *Musaceæ*, Heliconia 4, Musa 1. *Canneæ*, Canna 3, Maranta 7, Thalia 4. *Scitamineæ*, Costus 4, Amomum 4. *Orchideæ*, 150. *Piperaceæ*, Piper 35, Peperomia 29, Clarissia 6. *Fluviales*, Potomageton 3. *Aroideæ*, Caladium 4, Dracontium 1, Pistia 1, Pothos 1, Carludovica 2. *Balanophoreæ*, Cynomorium 2. *Typhinæ* 1. *Pontedereæ*, Pontedera 5, Heteranthera 5. *Butomeæ*, Limnocharis 1. *Alismaceæ*, Sagittaria 3. *Smilaceæ*, Cordyline 2, Smilax 9, Medeola 2, Herreria 1, Luzuriaga 1. *Dioscorinæ*, Dioscoria 6.

* See Preface to Illustration of the Genus Cinchona, p. 6 and 7.

DICOTYLEDONES.

Coniferæ, Araucaria 1, Thuja 2, Taxodium 1, Podocarpus 3, Dacrydium 1, Ephedra 1. *Cupuliferæ*, Quercus 22. *Myriceæ*, Myrica 4. *Amentaceæ*, Alnus 5, Salix 2. *Urticeæ*, Urtica 21, Boehmeria 12, Procris 2, Pilea 3, Ambrosia 4, Tafalla 1, Olmedia 8, Cecropia 11, Gunnera 1, Dorstenia 5, Ficus 30, Morus 2, Macluria 1, Celtis 5. *Euphorbiaceæ*, Euphorbia 21, Sapium 2, Hippomane 7, Hura 2, Croton 61, Acalypha 22, Llagunoa 4, Dalechampia 2, Chondodendrum 4, Jatropha 16, Castiglionia 1, Phyllanthus 16, Coriaria 3, Schæfferia 3, Synzyganthera 1, Carica 8. *Cucurbitaceæ*, Cucumis 4, Momordica 2, Elaterium 10, Sicyos 5, Gronovia 1. *Passifloreæ*, Passiflora 22, Tacsonia 9. *Asarinæ*, Aristolochia 8. *Elæagneæ*, Myoschilus 1. *Santalaceæ*, Quinchimalium 1. *Thymeleæ*, Daphne 1, Dais 1, Quisqualis 1, Neea 3, Cervantesia 2. *Proteaceæ*, Rhopala 5, Oreocalis 2, Lomatia 1, Quadria 1. *Myristiceæ*, Myristica 5. *Atherospermeæ*, Pavonia 1. *Laurinæ* 37. *Monimeæ*, Ruizia 1, Citrosma 7. *Polygoneæ*, Coccoloba 10, Polygonum 7, Rheum 1, Triplaris 3. *Begoniaceæ*, Begonia 20. *Chenopodeæ*, Atriplex 2, Chenopodium 7, Salicornia 1, Blitum 1, Basella 2, Cercodia 1. *Phytolacceæ*, Phytolacca 1, Rivina 4. *Amaranthaceæ*, Amaranthus 1, Iresine 2, Lestibudesia 2, Celosia 1, Gomphrena 7, Alternanthera 12, Achyranthes 13, Genus Novum 1, Lygodisodia 2. *Illecebreæ* 2. *Nyctagineæ*, Mirabilis 2, Boerhaavia 7, Oxybaphus 13, Boldoa 1, Buguinvillea 3, Pisonia 3. *Plumbagineæ*, Plumbago 1. *Lentibulariæ*, Utricularia 2, Pinguicula 2. *Plantagineæ*, Plantago 3, Littorella 1. *Primulaceæ*, Samolus 1. *Acanthaceæ*, Justicia 42, Dicliptera 22, Ruellia 40, Alvarezia 2. *Verbenaceæ*, Vitex 4, Volkameria 4, Callicarpa 5, Cornutia 2, Duranta 2, Russelia 4, Lippia 30, Lantana 15, Petræa 1, Verbena, Priva et Stachytarpheta 41, Mendozia 4, Avicennia 2. *Jasmineæ*, Fraxinus 2, Columellia 3, Menodora 2. *Labiatæ*, Cunila 3, Mentha 9, Glechoma 1, Hyptis 20, Bystropogon 12, Hyssopus 2, Teuchrium 8, Ocymum 8, Salvia 75, Monarda 1, Stachys 13, Marrubium 1, Lepechinia 2, Gardoquia 8, Genus Novum 1, Trichostema 1, Dracocephalum 1, Scutellaria 12. *Rhinanthaceæ*, Pedicularis 1, Castilleja 10, Gerardia 3, Lamourouxia 10, Buchnera 4, Unanua 1, Veronica 2, Alonsoa 4, Calceolaria 25, Jovellana 3, Angelonia 1, Orobanche 1. *Scrophularinæ*, Linaria 1, Maurandia 3, Chelone 8, Mimulus 5, Vandellia 1, Lindernia 1, Herpestis 2, Escobedia 2, Stemodia 4, Browallia 2, Virgularia 2, Russelia 4, Sibthorpia 2, Calytriplex 2, Gomara 1, Buddleja 24. *Gesnereæ*, Gesneria 20, Besleria 10. *Solaneæ*, Solanum 80, Nicotiana 11, Physalis 16, Saracha 5, Atropa 2, Hyoscyamus 3, Nectouxia 1, Datura 6, Solandra 2, Defontainia 2, Jabarosa 2, Triguera 1, Witheringia 1, Dunalia 3, Lycium 8, Vestia 1, Sessea 1, Cestrum 18, Fabiana 1, Xuarezia 1, Capraria 5, Scoparia 1, Nolana 4, Nierembergia 2. *Borragineæ*, Cordia 32, Cynoglossum 3, Tournefortia 14, Heliotropium 21, Lithospermum 12, Anchusa 4, Myosotis 4, Lycopsis 1, Echium 2. *Convolvulaceæ*, Convolvulus 43, Ipomæa 16, Evolvulus 8, Dichondra 2, Cuscuta 3. *Hydroleaceæ*, Hydrolia 2, Wigandia 4, Nama 7. *Hydrophylleæ*, Hydrophyllum 3, Phacelea 2. *Bignoniaceæ*, Bignonia 32, Astianthus, *Nob.* 1, Delostoma, *Nob.* 2, Tecoma 3, Stenolobium, *Nob.* 1, Jacaranda 2, Chilopsis, *Nob.* 1, Catalpa 1, Argylia, *Nob.* 1, Genus Novum 2, Eccremocarpus 2, Crescentia 4, Tourrettia 1. *Cobeaceæ*, *Nob.* Cobæa 2. *Sesameæ*, Sesamum 1, Salpiglossis 1, Craniolaria 1, Martynia 2. *Polemoniaceæ*, Polemonium 1, Cantua 4, Hoitzia 8, Caldasia 1. *Gentianeæ*, Gentiana 22, Swertia 4, Erythræa 3, Sebæa 1, Lisianthus 8. *Apocyneæ*, Echites 17, Cerbera 4, Plumeria 7, Tabernæmontana 5, Cameraria 1, Vallesia 3, Carissa 1. *Asclepiadeæ* 112. *Sapoteæ*, Chrysophyllum 4, Nycterisition 1, Achras 2, Lucuma 7, Rauwolfia *Fl. Peruv.* 5. *Myrsineæ*, Ardisia 3, Myrsine 13, Jacquinia 6. *Ebenaceæ*, Diospyros 6. *Guajacanæ*, Symplocos 13. *Ericinæ*, Vaccinium 5, Thibaudia 5, Ceratostema 2, Arbutus 3, Gaultheria 5, Andromeda 4, Clethra 4, Bejaria 3, Pyrola 3, Godoya 2. *Rubiaceæ*, Rubia 2, Valantia 4, Gallium 5, Spermacoce 21, Hedyotis 10, Richardia 2, Isnardia 3, Nerteria 1, Diodia 1,

Petesia 2, Spigelia 7, Bouvardia 10, Psychotria 41, Catesbæa 1, Coffea 7, Chiococca 6, Manettia 4, Lygodisodea 1, Rondeletia 4, Retinophyllum 1, Macrocnemum 9, Mussænda 3, Cinchona 20, Portlandia 3, Exostema 1, Nauclea 1, Pavetta 3, Laugeria 2, Coccocypsilum 6, Genipa 3, Higginsia 3, Gardenia 8, Oxyanthes 2, Randia 4, Machaonia 2, Ignatia 1, Hamelia 9, Schwenkfeldia 1, Gonzalea 6, Guettarda 2. *Caprifoliaceæ*, Symphorea 2, Caprifolium 1, Viburnum 6, Cornidia 1. *Strychneæ*, Strychnus 2. *Loranthеæ*, Loranthus 24, Viscum 6. *Campanulaceæ*, Campanula 2, Lobelia 50, Lysipomia 2. *Valerianeæ*, Valeriana 23. *Calycereæ*, Boopis 1. *Compositæ. Cichoraceæ*, Hieracium 1, Hypochæris 2, Sonchus 4, *Labiatifloræ*, Chaptalia 3, Perdicium 11, Onoseris 6, Genus Novum 1, Isotypus 1, Dumerilia 3, Homanthus 2, Chætanthera 3, Mutisia 6, Barnadesia 3, Chuquiraga 2, Triptilion 1, *Carduaceæ*, Cnicus 1, Carduus 1, Carduncellus 1, Centaurea 6, Genus Novum 1, Lagascea 5, Elephantopus 5, Rolandra 1, Trichospira 1, Spiracantha 1, Vernonia 18. *Conyzeæ*, Baccharis 42, Iva 5, Proustia 2, Conyza 4, Cephalophora 1, Gnaphalium 19, Inula 3, Erigeron 17, Aster 54, Andromachia 1, Solidago 3, Turpinia 1, Ethulia 2, Picqueria 2, Odontoloma 1, Guatterezia 1, Parthenium 3, Ageratum 3, Stevia 29, Paleolaria 1, Mikania 5, Eupatorium 106, Calea 1, Kuhnia 5, Kleinia 6, Cacalia 37, Culcitium 5, Senecio 40, Cineraria 8, Werneria 20, Munnozia 3. *Heliantheæ*, Helianthus 33, Galardia 1, Gymnoloma 4, Wedelia 6, Melampodium 15, Sclerocarpus 1, Unxia 2, Polymnia 6, Wiborgia 1, Ximenesia 4, Rudbeckia 6, Silphium 1, Balbisia 1, Heliopsis 1, Pascalia 1, Encelia 4, Leontothalmum 1, Diomedia 7, Eriocoma 1, Grindelia 3, Tagetis 15, Dyssodia 5, Schlechtendalia 1, Arctotis 2, Achyropappus 1, Hymenopappus 1, Schkuhria 1, Pectis 7, Eclipta 1, Ptilostephium 2, Galinsoga 2, Zinnia 8, Tragoceros 1, Platypteris 1, Trixis 2, Sobreyra 2, Georgina 2, Coreopsis 12, Bidens 40, Cosmos 6, Heterospermum 6, Actinomeris 4, Verbesina 25, Meyera 1, Sigesbeckia 2, Madia 2, Oteospermum 2, Xanthium 2, Milleria 2, Flaveria 5, Spilanthus 8, Helenium 2. *Anthemideæ*, Chrysanthemum 1, Soliva 4, Hippia 1. *Araliaceæ*, Aralia 12, Actinophyllum 5, Gilibertia 1. *Umbelliferæ*, Eryngium 17, Sanicula 3, Hydrocotyle 14, Bowlesia 5, Fragosa 7, Sison 2, Œnanthe 1, Caucalis 2, Pimpinella 1, Chærophyllum 2, Athamanta 1, Ligusticum 2, Peucedanum 3, Laserpitium 3. *Ranunculaceæ*, Ranunculus 11, Thalictrum 2, Clematis 2. *Magnoliaceæ*, Michelia 1, Magnolia 1. *Dilleniaceæ*, Tetracera 12, Curatella 1. *Wintereæ*, Drymis 1. *Anonaceæ*, Anona 15, Porcelia 1, Unona 1, Uvaria 6, Guatteria 7, Mollinedia 2, Verticillaria 1. *Menispermeæ*, Cissampelos 4, Izquierdia 1, Chondodendrum 2. *Lardizabaleæ*, Lardizabala 3. *Berberideæ*, Berberis 6. *Papaveraceæ*, Bocconia 2, Chelidonium 1, Elscholtzia 1, Diclytra 1. *Cruciferæ* 24. *Capparideæ*, Cleome 11, Capparis 22, Cratæva 1, Tovaria 1. *Sapindaceæ*, Cardiospermum 4, Paullinea 18, Semarillaria 7, Huertia 1, Acladodea 1, Sapindus 4, Schmidelia 1. *Dodonæaceæ*, Dodonæa 1, Llagunoa 4. *Hippocrateaceæ*, Hippocratea 6, Anthodon 1. *Malpighiaceæ*, Malpighia 14, Genus Novum 1, Triopteris 1, Banisteria 15, Securidaca 2. *Hypericinæ*, Palaua 3, Hypericum 24, Vismia 5. *Guttiferæ*, Æxtoxicon 1, Clusia 21, Alzatea 1, Mammea 1, Marcgravia 4, Ascium 2. *Ternstrœmiaceæ*, Ternstrœmia 5, Laplacia 1, Freziera 3, Genus Novum 2. *Hesperideæ*, Citrus 1, Limonia 1, Leonia 1. *Meliaceæ*, Ticorea 1, Styrax 7, Guarea 12, Trichilia 4, Barbasco 3. *Vitigineæ*, Vitis 10. *Geraniaceæ*, Geranium 6. *Oxalideæ*, Oxalis 13, Ledocarpon 1, Rhynchotheca 2. *Malvaceæ*, Malva 50, Hibiscus 49, Pavonia 9, Anoda 5, Sida 119, Myrodia 6, Ochroma 2, Bombax 4, Chorisia 2, Gossypium 2, Genus Novum 1, Cheirostemon 1, Cavanillesia 1. *Sterculiaceæ*, Buttneria 8, Ayenia 2, Theobroma 8, Guazuma 2, Melochia 7, Mougeotia 9, Waltheria 3, Sterculia 1. *Elæocarpeæ*, Vallea 1, Tricuspidaria 1. *Tiliaceæ*, Tilia 2, Muntingia 2, Triumfetta 14, Corchorus 12, Trilix 4, Vauquelinia 1. *Ochneaceæ*, Ochna 1. *Bixinæ*, Bixa 2. *Samydeæ*, Samyda 6, Casearia 2, Laetia 1. *Violaceæ*, Viola 12, Jonidium 13, Noisettia 1, Sauvagesia 1. *Cistinæ*, Helianthemum 6. *Polygaleæ*, Polygala 2, Monnina 16, Krameria 5. *Diosmeæ*, Simaba 1, Zanthoxylum 2, Galvezia 1. *Zygophylleæ*, Tribulus 4, Porlieria 1, Ordo Zygophylleis affinis, Smegmadermos 1, Kageneckia 3. *Caryophylleæ*, Silene 2, Mollugo 2, Arenaria 9, Cherleria 1, Cerastium 10, Stellaria 5, Drymaria 7. *Lineæ*, Linum 7. *Crassulaceæ*, Tillæa 1, Cotyledon 1. *Saxifrageæ*, Mitella 1, Heuchera 3, Saxifraga 5, Cornutia 1. *Cunoniaceæ*, Weinmannia 12. *Grossulariæ*, Ribes 9, Escallonia 10. *Nopaliæ*, Cactus 1. *Portulaceæ*, Portulaca 1, Talinum 6, Baitaria 1, Sesuvium 4, Tetragonia 1, Corrigiola 1. *Onagræ*, Œnothera 16, Jussiæa 11, Gaura 3, Epilobium 3, Fuchsia 12. *Loaseæ*, Loasa 15, Mentzelia 2. *Combretaceæ*, Combre-

tum 3. *Myrtaceæ*, Eugenia 10, Psidium 3, Campomanesia 1, Myrtus 50, Calyptranthes 1. *Salicariæ*, Calyplectus 1, Ginoria 3, Ammania 2, Cuphea 22, Lythrum 10. *Melastomaceæ*, Melastoma 2, Pleroma 1, Arthrostemma 4, Tococa 3, Clidemia 15, Cremanium 11, Centronia 1, Miconia 35, Conostegia 4, Chitonia 4, Axinæa 5, Meriania 1, Blakea 9, Species indeterminatæ 45. *Rosaceæ*, Rosa 1, Rubus 10, Potentilla 8, Geum 1, Genus Novum 2. *Sanguisorbeæ*, Alchemilla 3, Aphanes 4, Sanguisorba 1, Polylepis 2, Acæna 5, Margyricarpus 1. *Pomaceæ*, Cespilus 3, Pyrus 4. *Amygdalinæ*, Prunus 7. *Chrysobalaneæ*, Chrysobalanus 1. *Homalinæ*, Homalium 1, Azara 6, Pineda 1, Blackwellia 1. *Spiræaceæ*, Spiræa 3, Prockia 3. *Rhamneaceæ*, Rhamnus 24, Ceanothus 9, Dacostea 1, Colletia 2, Staphylea 2. *Celastrinæ*, Celastrus 10, Gouania 1. *Amyredeæ*, Amyris 1. *Anacardeæ*, Anacardium 1, Rhus 10. *Terebintaceæ*, Spondias 4, Ptelea 1, Schinus 2, Brunellia 4, Comocladia 2. *Cæsalpineæ*, Cassia 59, Larrea 1, Cæsalpina 6, Poinciana 2, Hoffmanseggia 1, Parkinsonia 3, Sesbania 2, Bauhinia 11, Brownia 1. *Papilionaceæ*, Pterocarpus 8, Geoffræa 6, Nissolia 6, Sophora 9, Hedysarum 80, Æschynomene 19, Coronella 1, Glycyrrhiza 1, Phaca 3, Astragalus 24, Lupinus 8, Robinia 5, Caragana 3, Halodendron 1, Piscidia 1, Colutea 2, Genus Novum 1, Galega 2, Indigofera 14, Abrus 3, Pisum 1, Lathyrus 1, Vicia 3, Ervum 1, Orobus 1, Dalea 46, Trifolium 4, Medicago 1, Trigonella 2, Lotus 6, Psoralea 8, Cytisus 2, Cajanus 2, Crotalaria 25, Clitoria 10, Glycine 16, Dolichos 20, Phaseolus 14, Negretia 5, Erythrina 10. *Mimoseæ*, Amorpha 3, Inga 38, Mimosa 27, Acacia 53, Schrankia 1, Desmanthus 10.

FRUITS AND SEEDS.

In order to render the account of this collection as complete as possible, I have thought it best to subjoin a list of the Fruits and Seeds; and, as they have not been yet sufficiently examined, I have preferred giving Pavon's MSS. verbatim.

Aroideæ.

Phytelephas macrocarpa

Piperaceæ.

Piper aduncum
sp. nova
sp. nova
flagelliforme
sp. inedita

Palmeæ.

Nunnezharia fragrans
Palma
Morenia
Palma
Palma Bufamita de Santa Fe
Palma sp. nova
Palma del Peru
Elais
Palma sp. nova
Palma hamata
Palma vernaculè Corogo
Morenia sp. nova
Martinezia interrupta
Palma gummifera
Palma
Pilophora testicularis
Palo amarillo del Peru
Mauritia vernaculè ovi
Iriartia deltoidea, vulgò camono

Musaceæ.

Musa sp.

Canneæ.

Maranta sp. nov.

Scitamineæ.

Amomum thyrsoideum
tinctorium
racemosum

Orchideæ.

Vanilla aromatica

Gramineæ.

Genus dubium
Paspalum purpureum

Asphodeleæ.

Anthericum tinctorium

Liliaceæ.

Alstrœmeria fimbriata
sp. nova
distichifolia
sp. nova

Bromeliaceæ.

Bromelia sessilis

Irideæ.

Sisyrinchium majus
sp. nova
anceps del Peru

Smilaceæ.

Smilax China

Coniferæ.

Araucaria imbricata

Urticeæ.

Gunnera scabra
Cecropia parviflora
sp. nova

Euphorbiaceæ.

Euphorbia graminifolia
Phyllanthus sp. nova
sp. nova è Huayaquil
Carica sp. vulgò Col de Morite

Passifloreæ.

Passiflora tiliæfolia
pyriformis
sp. nova
fœtida
sp. nova
suberosa
sp. nova
quadrangularis
triloba sp. nova
Passiflora rubra
sp. nova
Tacsonia sp.

Proteaceæ.

Embothrium pinnatum
Quadria heterophylla

Monimeæ.

Ruizia fragrans

Atherospermeæ.

Pavonia sempervirens

Laurinæ.

Laurus Pinoli
peumo
sp. nova
sp. nova
sulcata
sp. nova
ispingo
Persea
sp. nova
pucheri
sp. nova
sp. dubia

Myristiceæ.

Myristica sebifera
sp. nova vulgò Ulmech
sp. nova
sp. nova vulgò Moscada
sp. nova vulgò Coco

Chenopodeæ.

Chenopodium Quinoa
Atriplex de Mexico

Rhinanthaceæ.

Castilleja pinnata
Bartsia trinervis

Acanthaceæ.

Ruellia patula
Dianthera coccinea
sp. nova
nodosa
peruviana

Verbenaceæ.

Lippia umbellata
Aloysia citrodora

Labiatæ.

Nepeta dependens
Dracocephalum sp. nova

Scrophularinæ.

Escobedia scabrifolia

Solaneæ.

Solanum elæagnifolium
corymbosum
macrocarpum
Nicotiana sp. nova
Datura arborea

Borragineæ.

Messerschmidia fruticosa

Convolvulaceæ.

Convolvulus Mechoacan

Hydroleaceæ.

Hydrolea dichotoma

Bignoniaceæ.

Tecoma sp.
Jacaranda cærulea. Peru
sp. nova. Peru
Bignonia sp. nova
muricata sp. nova
sp. nova
longisiliqua
sp. inedita
catalpa
sp. foliis subtùs tomentosis
Tourretia lappacea
Crescentia Cujete

Gentianeæ.

Erythræa Canchalagua

Apocineæ.

Tabernæmontana arcuata
laurifolia. Peru
Echites sp. nova
cimicida. Mexico
Rauwolfia odorata
Cerbera sp. nova
sp. nova

Strychneæ.

Strychnos sp. nova
Abilla
macrocarpa

Sapoteæ.

Chrysophyllum sp. nova
sp. vulgò Mamei colorade
Achras vulgò Nespero
sp. nova
Lucuma

Guajacanæ.

Symplocos sp. nova

Ericeæ.

Cuellaria sp.
Andromeda hispida
Gaultheria sp.

Gesneriaceæ.

Gesneria sp. nova

Compositæ.

Helianthus sp. nova
Helenium prostratum
Rudbeckia sp.
Alcinia perfoliata
Madia viscosa
mellosa
Milleria quinqueflora
Eupatorium scariosum
Pectis trifida
Aster glutinosus sp. nova
diversifolius
giganteus sp. nova

Rubiaceæ.

Genipa oblongifolia
Psychotria sp. nova
Genus Novum
Gardenia longiflora
Coffea racemosa
Havanensis
umbellata
sp. nova
sp. nova
Portlandia sp. nova

Araliaceæ.

Actinophyllum angulatum
Aralia umbellata Peru
racemosa
sp. nova Peru

Papaveraceæ.

Bocconia frutescens
tinctoria

Capparideæ.

Marcgravia sp. nova

Sapindaceæ.

Paullinea obliqua
laciniosa
Semarillaria obovata

Erythroxyleæ.

Erythroxylum Coco

Hypericinæ.

Hypericum sp. nova
ericoides

Hesperideæ.

Limonia triphylla
Heisteria punicea

Meliaceæ.

Gaurea sp. nova
sp. nova altera

Cedreleæ.

Cedrella odorata

Malvaceæ.

Hibiscus sp. nova
tubulosus
sp. nova
malvaviscus
cuneatus
manihot
Malva umbellata
parviflora
sp. nova
verticillata
Sida angustifolia
frutescens
Bombax sp. nova
parviflorum
sp. nova vulgò Bototillo
sp. altera nova
polyandrum
heptaphyllum vulgò Pochotl
Ayenia pusilla

Buttneriaceæ.

Buttneria sp.
aculeata Peru
Apeiba echinata

Tiliaceæ.

Waltheria tomentosa

Bixinæ.

Bixa orellana
platycarpa

Anonaceæ.

Anona tripetala
sp. nova
sp. altera nova
acetosa
Gualteria sp. nova
sp. nova
Porcelia nitidifolia

Menispermeæ.

Menispermum sp. nova

Diosmeæ.

Galvezia punctata

Ordo Zygophylleis affinis.

Kagenockia oblonga
Smegmadermos
emarginatus

Cunoniaceæ.

Weinmannia sp. nova
sp. nova

Onagræ.

Œnothera sp. nova

Loaseæ.

Mentzelia aspera
Mendozia racemosa

Myrtaceæ.

Psidium pyriferum
pomiferum
Campomanesia lineatifolia
Myrtus sp. nova
sp. nova
sp. nova altera
Eugenia nova species
rhyptocarpa

Melastomaceæ.

Blakea sp.

Salicariæ.

Calyplectus acuminatus

Pomaceæ.

Mespilus lanuginosa

Amygdalinæ.

Prunus sp. nova

Chrysobalaneæ.

Chrysobalanus Icaco

Cæsalpineæ.

Cassia vulgò Cascavellilo
Fistula
vulgò Fraxelillo
sp. inedita
occidentalis
hirsuta
procera
sp. nova
sp. nova altera
vulgò Milmilva
sp. nova
fœtida
Æschynomene sp. nova
incurva
Parkinsonia aculeata
Cæsalpina Tara

Mimoseæ.

Mimosa plicata
sp. nova
vulgò Potatillo
sp. nova
sp. de Huayaguil
inga
prostrata
sp. nova

Huarango
peregrina
vulgò Bucuenque
vernaculè Chalub
purpurea
sp. nova
expansa
Intsia
circinalis
farnesiana
acutangula
sp. nova

Papilionaceæ.

Hedysarum sp. nova
Dolichos sp.
Lablab
sp. nova
Glycine bituminosa
Abrus
Negretia sp.
inflexa
elliptica
platycarpa
Phaseolus rubicundus
sp. nova
griseus
sp.

Terebintaceæ.

Schinus molle
Spondias nitida
fragrans

Amyrideæ.

Amyris sp. nova
sp. altera inedita

Dodonæaceæ.

Dodonæa sp.

Zanthoxyleæ.

Fagara sp. nova

Celastrinæ.

Euonymus sp. nova Peru
Celastrus sp. nova
verticillatus
sp. nova
sp. vulgò Mayten

Rhamneaceæ.

Colletia vulgò Zaque
Elæodendron trinerve

Euphorbiaceæ.

Ætoxicon punctatum

Amentaceæ.

Celtis sp. nova
sp. nova altera
sp. nova

Genus dubii Ordinis.

Gomortega nitida

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44. Dr. Richardson, the indefatigable companion of Captain Franklin, presented to Mr. Lambert a collection of specimens made during his journey to the shores of the Polar Sea. They are named according to Dr. Richardson's Botanical Appendix to the account of the expedition.

45. Captain King, who is just returned from his survey of New Holland, has had the kindness to present Mr. Lambert with a very rich collection of specimens from King George's Sound, where he remained three weeks, and collected every plant he could find; among them are several fine specimens of *Banksia grandis*, in flower and fruit, also *Banksia æmula* and *ilicifolia*. Captain King was fortunate in meeting with that curious plant, the Grass-tree; of this he has also given Mr. Lambert a fine specimen. This zealous navigator has laid down 3000 miles of new coast, having completed the survey of that part left off by the unfortunate Captain Flinders.

46. Lieutenant Roe, who was with Captain King, collected many specimens, in the department of natural history, was so good as to subject his Herbarium to Mr. Lambert's inspection, and allowed him to take such specimens as he had not before got.

47. Sir Stamford Raffles has lately sent a collection of specimens from Singapore; among them are several specimens of an Epacrideous plant, belonging to the New Holland Genus *Leucopogon*, and described in "The Malay Miscellanies" under the name of *Leucopogon Malayanus*. There are also fine specimens of the *Jackia ornata*, a Rubiaceous genus, named by Dr. Wallich in the 2nd volume of Roxburgh's *Flora Indica*, in honour of the late distinguished naturalist, Dr. Jack, Sir Stamford's zealous coadjutor in Natural History.

48. Mr. Cowan, who is now at Lima, has very lately sent from thence, two rich boxes of bulbs and seeds, many of which are flowering at Boyton, and have afforded several specimens for the Herbarium. Seeds of *Chenopodium Quinoa* came in these boxes, but they had lost their vegetative power.

49. Mr. Mogg, who accompanied the late expedition under Captain Parry, has presented Mr. Lambert with a rich collection of specimens, which he made during the stay of the expedition.

50. Mr. Colebrooke, who so long and ably filled the chair of the Asiatic Society of Bengal, and so celebrated for his zeal in the cultivation and promotion of the sciences and literature of India, has enriched the Herbarium by frequent communications received from India. Among the additions made by this gentleman, we may notice three new species of the Genus *Myristica*, or Nutmeg, from Singapore, and specimens of the *Dryobalanops Camphora*, the Camphor tree of Sumatra.

51. Mr. Wilkins has had the kindness to afford Mr. Lambert very fine specimens of the *Nepenthes Rafflesiana*, *distillatoria*, and *ampullacea*.

52. Mr. Sabine has obligingly afforded Mr. Lambert several specimens and plants from the valuable collection of the Horticultural Society at Chiswick.

Mr. Lambert has lately received a plant of *Dacrydium cupressinum*, and *Ilex paraguensis*, the famous Tea-tree of Paraguay, which is the first ever introduced to this country.

53. Mr. Nuttall presented to Mr. Lambert the whole Herbarium collected by him in his travels up the Missouri, which comprised a great number of very curious and interesting new species, and some new genera, such as *Bartonia* and *Maclura;* and along with these were many living plants, which are now growing at Boyton. Mr. Lambert also received specimens of all the plants collected by Mr. Bradbury, who accompanied Mr. Nuttall, the descriptions of which are inserted by Pursh in the appendix to his Flora of North America.

54. Mr. Hawkins, who accompanied the late Dr. Sibthorp in his travels through Greece, gave Mr. Lambert many specimens, which he had collected in that country.

55. While the present sheet was about being put to the press, Mr. Lambert received one of the most magnificent collections of dried plants ever made on the south coast of New Holland. They are principally of the order *Proteaceæ*, and are chiefly from King George's Sound and its vicinity. Mr. Lambert is indebted for these to the friendship of Francis Henchman, Esq. who, from his zeal for promoting the science of Botany, sent at his own expence, Mr. Baxter, a most excellent collector, and well versed in the knowledge of plants. Mr. Baxter was instructed to hire a vessel at Sydney, in New South Wales, in order to proceed to King George's Sound. How far he has succeeded in his arduous and meritorious undertaking, the fine collections which he has already sent home, will abundantly testify. There were several barrels exclusively containing cones of the various species of *Dryandra Banksia*, *Grevillea*, *Lambertia*, and other Proteaceous Genera peculiar to King George's Sound. Among the Banksias and Dryandras are several new species. The collection of seeds was very extensive, and a great part of them Mr. Mackay has been successful in raising at his interesting nursery at Upper Clapton, which now contains the most valuable collection of New Holland plants that have yet been introduced to this country.

ON THE NATIVE COUNTRY OF THE

POTATOE.

"IT has long been a desideratum among Botanists to ascertain the native country of the Potatoe, *Solanum tuberosum*. I beg leave now to offer some communications on that subject, which I have lately received in a letter from the celebrated author of the *Flora Peruviana*, Don Jose Pavon, who resided many years in South America, dated Madrid, September 23, 1817, who says, "The *Solanum tuberosum* grows wild in the environs of Lima, in Peru, and fourteen leagues from Lima on the coast; and I myself have found it wild in the kingdom of Chili. I can assure you this is the truth. The Indians cultivate it in great abundance in Peru and in Chili, and call it *Papas*. There are other wild species, such as *Solanum montanum* which also gives a *radix tuberosa*." Of this I have received from the above-mentioned author of the *Flora Peruviana* fine wild specimens with the root. In another letter, dated Madrid, Nov. 10, he again repeats, "I mentioned to you that *Solanum tuberosum* grows spontaneously near Lima, and in the kingdom of Chili, where it was also found by my companions Dombey and Ruiz." I have lately received from M. Pavon very fine wild specimens of *Solanum tuberosum*, collected by himself in Peru. Don Francisco Zea, companion and friend of the celebrated Mutis, who long resided in South America, assured me, when he was in this country, that he had often found it wild in the forests near Santa Fé de Bogota, observing, at the same time, that the reason why Baron de Humboldt had not found it when he was in that country, was, because he had not time to examine those places where it grew. In a letter (addressed to Mr. Frazer of Sloane-street, Chelsea,) lately received from Dr. Baldwin, an excellent American botanist, who has lately returned from the coast of South America, in the Congress frigate, of the United States, he says, "I found many plants that appeared to be new, during my excursion in South America, and had the satisfaction of submitting most of my specimens to M. Bonpland, who has settled himself in the vicinity of Buenos Ayres. It was not the least pleasing of my discoveries to find the famous *Solanum tuberosum* growing spontaneously among the rocks on Monte Video; in a part of the country, too, where this valuable vegetable is not cultivated. I also found it on the same side of the river in the vicinity of Maldonado." A species of *Solanum* was found by Commerson in the neighbourhood of Monte Video, named by Dunal, in his *Synopsis of the Genus Solanum*, page 5, *Solanum Commersonii*, from a specimen preserved in the Museum at Paris. It is also described in the *Supplement to the Encyclopedie Methodique*, Vol. III., p. 746. I have no doubt that this is the same with the plant found by Dr. Baldwin. On making inquiry, relating to this plant, of Captain Bowles, who has lately returned from the South American station, and who has resided for a considerable time at Buenos Ayres, he told me he knew it well, and that it is a common weed in the gardens and in the neighbourhood, bearing small tubers like those of the potatoe, but too bitter for use. Whether this be the original stock of our common potatoe, improved by cultivation, future observation must determine. Molina, in his *History of Chili*, speaking of the potatoe, says, "It is indeed found in all the fields of that country; but those plants that grow wild, called by the Indians *Maglia*, produce only very small roots, of a bitter taste."

"The wild potatoe has been gathered in Chili, by Mr. Caldcleugh, a gentleman who has been several years resident in South America, and two roots brought by him from thence have been cultivated in the garden of the Horticultural Society. The roots, although very small, grew remarkably luxuriant, and the stems produced by them covered a space full four yards in circumference. The stems and leaves were rougher and more rigid than in the cultivated potatoe, and the flowers somewhat smaller. The leaves at first were equally

pinnate, as described by M. Dunal in *Solanum Commersonii;* but, as the plant advanced to flower, they lost this character, and became unequally pinnate as in the cultivated potatoe. This plant, I have no doubt, is identical with the *S. Commersonii* of Dunal, and confirms the opinion which I formerly advanced, that *S. Commersonii* is the *Solanum tuberosum* in a wild state. After a careful comparison of this plant with different varieties of *Solanum tuberosum*, I have not been able to discover a single character by which they could be separated as distinct species, and the differences observable between them are of little botanical importance in this tribe of vegetables, and are merely what would be expected to exist between the wild and cultivated state of the same species. I have been induced to say thus much on this subject, having formerly ventured an opinion respecting these two plants being of the same species."—*Journal of Science and the Arts, Nos.* 19 & 28.

In the foregoing I have, I trust, satisfactorily proved the existence of the potatoe in a wild state on both sides of the South American continent. In further confirmation of the propriety of this opinion, which, indeed, seems now to be generally admitted, I may mention that Mr. Dickson of Liverpool, a gentleman of great intelligence, and an acute observer, who has recently returned from Buenos Ayres, where he has resided many years, assured me that the wild potatoe, which he knew well, grows in the greatest abundance in the vicinity of that city; and that in foliage and habit it resembled so much the cultivated sort, that no difference was to be observed between them, unless that the roots of the former were small and not eatable. He stated, also, that it was always regarded as a weed, and rooted out from the gardens and cultivated grounds accordingly. The wild potatoe is evidently susceptible of great improvement; for, having obtained, from the Horticultural Society, some cuttings of the plants brought by Mr. Caldcleugh, the tubers have now increased in size and improved in quality.

Mr. Sabine, the indefatigable Secretary of the Horticultural Society, has lately given, in the "2d *part* of the 5th *volume* of the *Transactions* of the Horticultural Society," a paper on the potatoe, in which he endeavours to prove that the *Solanum Commersonii* of Dunal is distinct from *Solanum tuberosum.* He has accompanied his account with a figure of Commerson's original specimen, from which Dunal formed his description. Not having seen the specimen itself, I shall endeavour, from the figure, to reconcile the differences apparently existing between these two plants. The figure clearly indicates, that the specimen has been the production of a weak and stunted plant. This is shown by the imperfect development of its leaves, which exactly resemble those of a seedling potatoe. Dunal and Mr. Sabine appear to lay great stress on the greater size of the terminating leaflet; but this inequality of the terminal leaflet is common to all plants with *folia impari-pinnata*, and more especially to the species of *Solanum* with pinnated leaves. After seeing the figure, I went and examined a field of potatoes, and was fortunate in picking up several slender stems, agreeing in this point so exactly, and in having the lower leaves almost simple, that on shewing them to the distinguished President of the Linnæan Society, Sir James Edward Smith, he said there could not be the smallest doubt as to their identity in these respects. The corolla of *Solanum Commersonii* is described by Dunal as quinquefid, and so it is represented in the figure; but it is not at all probable, that two plants, agreeing in other respects, should yet differ in this important point. The joint of the pedicels mentioned by Dunal, and also occurring in *Solanum tuberosum*, is not noticed in the figure. I mention this circumstance merely to shew how little confidence is to be placed in figures taken from dried specimens: for, were the form of the corolla and the disposition of the laciniæ to be relied on, they would remove this plant not only from the genus *Solanum*, but also from the order to which it evidently belongs.

I have lately received from my friend Mr. Cowan, now residing at Lima, and to whom I have been so often obliged on former occasions, a root of the celebrated golden potatoe, Patatas amirillos of the Spaniards, which grows wild about 16 leagues from Lima. This, which is now growing with me, proves to be nothing more than a variety of *Solanum tuberosum.*

Tab. II.

Ilex Paraguensis.

Weddell Sculp.

ILEX PARAGUENSIS.

TEA-TREE OF PARAGUAY.

I. Paraguensis, foliis cuneato-oblongis ellipticisve obtusis coriaceis nudis supernè crenatis, umbellis subsessilibus multifloris petiolo longioribus.

Habitat in Paraguæ sylvis, aliisque regionibus Americæ æquinoctialis.

Arbor magna, facie *Citri*. *Rami* numerosi, frondosi. *Folio* alterna, sempervirentia, brevè petiolata, cuneato-oblonga sive elliptica, coriacea, obtusa, 3--4 pollices longa, $1\frac{1}{2}$ v. 2 lata, utrinque plana, gabra, suprà lucida, è medio ad apicem obtusè crenata. *Umbella* axillaris, di v. trichotoma, multiflora, ferè sessilis. *Pedicelli* plures, glabri, uni v. pluriflori. *Flores* albi, tetrandri (nunc rarò 5-fidi, pentandri), magnitudine *Ilicis Aquifolii*. *Calyces* membranacei, 4-fidi: *laciniis* rotundatis, concavis. *Petala* quatuor, ovalia.

Baccæ Sphæricæ, rubræ, magnitudine *grani Piperis*, octosulcatæ, tetrapyrenæ.

For a knowledge of this highly interesting plant, I am indebted to the friendship of Don Jose Pavon, who lately sent me, along with an extensive collection of other South American Plants, the specimen from which the preceding description and figure were taken. M. Bonpland found this tree growing in the neighbourhood of Buenos Ayres; but neither in flower nor fruit, and therefore was not certain as to the genus to which it belonged, but conjectured it to be a new species of *Ilex*. He transplanted some trees of it into his garden near Buenos Ayres, which were, however, destroyed before they produced flowers. My friend, Mr. Caldcleugh brought some of the prepared leaves on his return from South America, among which were many ripe berries, from which I was enabled to make out satisfactorily its genus; and the flowering specimen here figured proves it to be a new species, which I have, therefore, called *Ilex Paraguensis*. The Tea of Paraguay has been referred by Botanists, sometimes to the *Ilex Cassine*, and at other times, but equally erroneously to the *Ilex vomitoria*. Indeed its distinguishing characters are so marked, that it will not be easily confounded with these or any of the species of *Ilex* hitherto published. I shall conclude this article by subjoining the following interesting extract, relating to this tree, taken from the fourth volume of the *Seminario de Buenos Ayres* of Azara, for which I am obliged to the kindness of Mr. Walton.

The tea-tree of Paraguay, called in the country *yerva mate*, is one of the most useful trees in Paraguay, to which it is nearly peculiar. It is found growing spontaneously, intermingled with the other native trees, in the forests which cover the banks of the rivers and streams which fall into the Parana and Uruguay, as well as at the sources of the rivers Ipane and Jejui. The tree is large, and often equals in size the common orange tree; but in the places where the leaf is regularly gathered, it becomes stunted, from the limbs being cut every two or three years but not oftener, from its being thought that this time is requisite to season the leaves, which do not fall off in winter. The trunk is about the size of the thigh; the bark is smooth and whitish: the boughs, which spring upwards like those of the laurel, are leafy and tufted. The leaf is elliptic,

cuneiform, from 4 to 5 inches long, thick, glossy, crenated, of a dark green above, and paler below. The petiole is of a dark red, and half an inch long. Its flowers are produced in umbells of 30 or 40 flowers each with 4 petals with the same number of stamens. The berry is red, very smooth, and of the size of a pepper.

The practice adopted generally for procuring the leaves, is for the merchant to provide himself with a quantity of such goods as are best suited to the natives; mules, hides, and matchetes, or hatchets, which are used to lop off the boughs, and a few axes. After obtaining the permission of the Governor, he goes to the quarter where the natives understand the work, and there he gives public notice of his design. The cutters collect, and having received advances in goods, he provides them with mules; and then conducts them to whatever yerval or grove promises the best harvest. The first object is to form small cabins for their dwellings. Every morning the cutters disperse on foot in search of trees, from which each cuts as many branches as he can carry; and after scorching them over a fire, he brings them to the general deposit. A hurdle of long poles is there prepared, in the shape of a cylindrical vault, which they call barbaqua; on this the branches are placed, and under, a large fire is made, on which they dry the leaves. This done, they remove the fire, and on the hard and hot platform, after being swept clean, they throw the branches, which they beat to separate the leaves. In this each is assisted by a boy called a quayno, who receives the proportion of 25lbs. of leaves for every bundle of branches he cleans.

The leaves being separated from the branches, and prepared sufficiently, are next put into a large bag made of hides, which has the four upper corners fixed to four large stakes placed in the ground fitted to support a considerable weight, into which they put the leaves, and beat them down with a pole, in the same way as the negroes of the West Indies pack their cotton bags. When the bag is filled and packed hard, the mouth is sewed up, and in this state, without further preparation, the leaves are fit for use, but not considered as seasoned till they are a few months old.

This constitutes the daily labour of one of the workmen employed, who delivers in to the overseer the quantity he has been able to prepare, which is noted down to his credit, and received at the price agreed upon; but it often happens that a dry magazine is formed, into which the bags are emptied: when the leaves are deposited in a large quantity, they are thought to improve by being left in that state six months. It is then packed in bags of 7 or 8 arrobas. The leaves are generally passed through a cribble to take away the small pieces of stick, which preparation is called caamiri, the mode always adopted by the Jesuits. It is then generally picked to make two qualities, called *fuerte* and *electa*.

The latter, which is the best, is consumed in the provinces of La Plata to the amount of 50,000 arrobas, 1,250,000 lbs., where it is worth half a dollar more than the other per arroba; and the rest, which is the second quality, goes to the provinces of Chili, Peru and Quito.

Out of the same magazine or deposit, which is called *perchel*, the quality of the leaf is not all the same, which arises from the labourers working in all kinds of weather; when this is wet, the leaf must of consequence be inferior.

We find in the beginning of the 17th century, that this plant was in common use throughout Paraguay, and there can be no doubt but that the Indians of Monday taught it to the conquerors, from their being the natives who lived in the vicinity of the Forests. The quantity used by a person who is fond of it is an ounce, and that daily gathered by a labourer is from 4 to 12, and sometimes more arrobas. There are, among the Creoles or Mestizoes, many who falsely charge the Paraguayians with having exterminated the Indians by making them work at this labour.

These leaves are used in Paraguay, La Plata, Chili, Peru and Quito indistinctly at all hours of the day, by putting a handful into a kind of tea pot called mate, (which has given its name to the herb) and from the spout of this the hot liquid is imbibed. Some mix sugar with it, and others add a few drops of lemon juice; and by pouring fresh boiling water, the infusion may be renewed. 200,000 arrobas, equal to 5 millions lbs., are annually obtained from Paraguay, 110 arrobas of which go to Chili, from whence Lima and Quito are supplied; the rest is expended in the vice-royalty of Buenos Ayres.

These leaves are used in Paraguay, La Plata, Chili, Peru and Quito indistinctly at all hours of the day, by putting a handful into a kind of tea-pot called mate, (which has given its name to the herb) and from the spout of this the hot liquid is imbibed. Some mix sugar with it, and others add a few drops of lemon juice; and by pouring fresh boiling water, the infusion may be renewed. 200,000 arrobas, equal to 5 millions lbs., are annually obtained from Paraguay, 110 arrobas of which go to Chili, from whence Lima and Quito are supplied; the rest is expended in the vice-royalty of Buenos Ayres.

The Jesuits planted a great number of these trees round all their towns and settlements; but their example has been since little followed, nor has the Government adopted those provident measures, which might ensure the propagation and preservation of so valuable a tree. It might even be extended to other parts of the continent, for, to carry it as far as Assumption, now costs as much as its primary value. At present the groves are situated in deserts often exposed to the invasions of the uncivilized tribes: these have sometimes destroyed the labourers, who also frequently contract disorders and undergo severe hardships. By plantations being formed in inhabited parts, such difficulties would be avoided, the gathering would cost less from women and children being employed, and the destructive mode of collecting the leaves might be improved."

"The Tea, or Herb of Paraguay, is the leaf of a species of Ilex, about the size of a middling apple-tree. It tastes, when green, like mallow leaves; and in shape it nearly resembles the leaf of the orange-tree. The seeds are like those of the ivy. The leaves are roasted or dried, and almost pulverized, before they are packed up. There are three kinds of it in its prepared state, though produced but by one plant. Caa is the distinctive Indian appellation of the plant; and the three sorts are called caa-cuys, caa-mini, and caa-guazu, the last being denominated by the Spaniards, yerva de palos. The caa-cuys is the first bud of the leaf, when scarcely developed; the caa-mini is the full-grown leaf stript off from its ribs before roasting; and the caa-guazu is that roasted without any preparation. The caa-cuys will not bear transportation, nor will it keep so long as the other two sorts, which are sent in great quantities from Paraguay to Tucuman, Peru, and Chili. The aromatic bitterness which the herb possesses, when prepared, is more powerful on the spot where it grows, and is partly dissipated by carriage. The principal harvest of this herb is made in the eastern part of Paraguay, and about the mountains of Maracayu, but it is cultivated in the marshy valleys that intervene between the hills, and not on the eminences themselves. The people of South America boast of innumerable virtues, which they attribute to this plant. It is certainly aperient and diuretic; but the other qualities ascribed to it are doubtful. It is used by infusion. Few of the chapetones use it, but the creoles are passionately fond of it, and never travel without a supply of it. They never fail to drink the infusion at every meal, and never eat till they have taken some of this favourite beverage. It is not drunk in the same manner as tea in Europe: the herb is put into a calabash, which is fixed upon a stand, and generally mounted with silver: this they call maté. They most usually sweeten it with sugar, but they sometimes add lemon-juice. Boiling water is then poured on it, and it is drunk off directly, for, if suffered to remain long, the liquor would become as black as ink. To avoid swallowing the pulverized herb itself, which swims on the surface, they use a silver pipe called bombilla, the top of which is perforated with several holes, through which they suck the liquor. A whole party is supplied by handing round the same bowl and pipe from one to another, and filling up the vessel with hot water as fast as it is drunk out. The repugnance of Europeans to drink after all sorts of people, in a country where syphilitic diseases are very prevalent, has occasioned the introduction of small glass pipes, with which each person is sometimes provided. In the mine-countries the use of this herb is more particularly universal, from the opinion that prevails amongst the Spaniards, that the wines there are prejudicial to health. Like opium, it produces some singular and contrary effects; it gives sleep to the restless, and spirit to the torpid. Those who have once contracted the habit of taking it, do not find it an easy matter to leave it off, or even to use it in moderation, though, when taken to excess, it brings on similar disorders to those which are produced by the immoderate use of strong liquors."—*Wilcocke's History of Buenos Ayres, p.* 494.

TAB. 5.

ILEX MARTINIANA.

GUIANA HOLLY.

ILEX MARTINIANA, foliis ovali-oblongis crenatis coriaceis lucidis brevissimè acuminatis, racemis aggregatis compositis læviusculis, floribus tetrandris, stigmate sessili dilatato quadrilobo.

Habitat in Guianâ. *Martin.*

DESCRIPTIO.

Arbor sempervirens, frondosa. *Rami* teretes rigidi, cortice cinereo levissimè rimoso obducti. *Folia* ovalia, v. sæpiùs ovali-oblonga, brevissimè acuminata, mucronulo mercescente deciduo, hinc obtusa, coriacea, rigida, suprà intensè viridia, lucida, subtùs pallidiora, atque atomis verosimilitèr resinosis densè conspersa, costâ validâ venisque prominulis instructa, orâ marginata, paululùm reflexa, crebriùs serrata, serraturis apice marcescentibus deciduis, indè crenata, basi sæpiùs rotundata, nunc verò attenuata, 2-5 pollices longa, sesquiunciam v. ferè 3 uncias lata. *Petioli* brevissimi, vix semiunciales, crassi, suprà planiusculi, sulco exarati, subtùs convexi, glabri. *Racemi* axillares, plures (3-5) ex eodem puncto ortum ducentes, compositè ramulosi, læves, apicem versus tamen minutè puberuli, rarò simplices, erecti, pollicares v. sesquipollicares. *Flores* albi, pedicellati, magnitudine præcedentis. *Bracteolæ* squamæformes, lanceolatæ, acutæ, persistentes. *Calyx* 4-lobus: *lobis* orbiculatis, minutè ciliatis. *Corollæ segmenta* üsdem alterna. subrotunda, concava. *Stamina* 4, calycinis lacinüs opposita: *filamenta* subulata, compressa, basi dilatata, glabra: *antheræ* ovales, biloculares. *Ovarium* 4-ovulatum. *Stigma* sessile, dilatatum, depressum, quadrilobum, medio paulò umbilicatum. *Bacca* sphærica, rubra, 4-pyrena. *Pyrenæ* trigonæ, læves, nec sulcatæ.

I was at first led to suppose this species as the same with the *Ilex Paraguensis*, figured at Tab. 4. A more careful examination, however, proves them to be different; but their affinity is so great, that there is sufficient reason to believe their properties are very similar. I am happy in being enabled to give a plate of this fine species, were it for no other reason than the opportunity it affords me of testifying my respect for the memory of M. Martin, whose splendid collections, taken by an English privateer in the beginning of the last war, afford ample testimony of his zeal and industry in the pursuit of science. It is a native of Guiana, and no doubt of the mountainous region of that interesting country. The portion of M. Martin's Herbarium in my possession contains 5 or 6 fine specimens of this interesting tree, and from these specimens the drawing was made.

J. Lycett del.

Printed by C. Hullmandel.

ILEX PARAGUENSIS.

G. Nicholson Lithog.

Tab 17.

Ilex Gongonha.

Sowerby Del. et Sc.

TAB. 6.

ILEX GONGONHA.

BRAZILIAN TEA-TREE.

ILEX GONGONHA, foliis ellipticis pungenti-mucronatis spinuloso-dentatis basi rotundatis suprà viridibus lucidis, spicis subgeminis ramosis densè pubescentibus, floribus pentandris, stylo distincto.

Cassine Gongonha. *Mart. Travels* (Eng. edit.) 2. p. 100.

Habitat in Brasiliæ Provinciâ Minarum. *Martius.*

DESCRIPTIO.

Arbor (ex auctoritate Cl. Martii) 10-20-pedalis, sempervirens, densè ramosa, frondosa. *Rami* conferti, cylindracei, cortice cinereo lævi obducti. *Folia* alterna, brevè petiolata, elliptica, coriacea, pungenti-mucronata, basi rotundata, suprà viridissima, lucida, subtùs pallidiora, costâ validâ venisque prominulis instructa, margine incrassata, cartilaginea, spinuloso-dentata v. nunc ferè integerrima, 3-5-pollicaria, sesqui v. $2\frac{1}{2}$-unciam lata. *Petioli* validi, teretiusculi, vix semiunciales, suprà sulco cunaliculati. *Cymæ* solitariæ, vel geminæ, nunc spicatim simplices, sæpiùs divaricato-ramosæ, subpaniculatæ, densè pubescentes. *Bracteolæ* squamæformes, ovatæ, concavæ, canescenti-villosæ, obtusæ, persistentes. *Flores* albi, sessiles. *Calyx* 5-fidus: *segmentis* ovatis, obtusis, membranaceis, concavis, albo-coloratis, extùs canescenti-villosis. *Petala* obovato-oblonga, lacinüs calycinis alterna, ungue crassiori. *Filamenta* 5, subulata, glabra, petalis alterna, üsdemque ferè duplò breviora. *Antheræ* subrotundæ. *Ovarium* 5-ovulatum, superum. *Stylus* distinctus, ovarii ferè longitudine, lævis. *Stigma* obtusum, pruinosum. *Bacca* matura nondum vidi.

This plant affords the kind of tea called in Brazil *Gongonha*, or *Congonha*, and which is considered by some as identically the same with that from Paraguay. M. de St. Hilaire, as well as Dr. Martius, appear to be of this opinion. The former had an opportunity of examining the true Paraguay tea, planted by the Jesuits around their ancient Missions, and he assures us that his opinion, as to their identity, is founded on a comparison of specimens. The character he has given, however, of the Paraguay Tea, under the name of *Ilex Mate*, will be found to apply much better to our Tab. 4, than to the present species. He describes the leaves as obtuse, and the stigma as four-cleft, whereas in the present species the leaves are terminated by a longish thorny point, and the stigma is entire; not to mention also that the peduncles are mostly simple

and spiked. I have referred it to *Ilex*, on account of its habit and other characters, notwithstanding the presence of a style, and its pentandrous flowers. This plant is a native of the province of Minas Geraës in Brazil, where it was discovered by my excellent friend, Dr. Martius, to whom I am indebted for the specimen represented in the plate, as well as for many other equally interesting novelties in the vegetable kingdom. M. de St. Hilaire met with his plant near Curitiba in the province of St. Paulo, and it is reasonable to suppose that this is the same as the plant from Paraguay. Since the export of tea from Paraguay has been prohibited by the present Dictator, Dr. Francia, the inhabitants of the other states, who were formerly supplied from Paraguay, are now obliged to use that from Brazil, which is found to be much inferior. Persons ignorant of the specific distinction between the two trees, have attributed the inferiority of the Brazil kind merely to the different mode of preparing the leaves.

Nepenthes Rafflesiana

Weddell Sc.

TAB. 7.

NEPENTHES RAFFLESIANA.

RAFFLESIAN PITCHER PLANT.

NEPENTHES RAFFLESIANA, foliis petiolatis, ascidiis inferiorum ventricoso-campanulatis anticè membranaceo-alatis, superiorum infundibuliformibus nudis, omnium ore pulcherrimè striato obliquo posticè assurgente. *Jack in Mal. Misc. 3. p. 20.*

Native of the forests of the island of Singapore.

THE *Root* is fibrous. *Stem* ascending at the base, becoming erect, and supporting itself on the neighbouring trees; the young parts covered with a deciduous tomentum or down. The *Leaves* are alternate, petiolate, the lower ones crowded and lanceolate, the upper ones more remote and oblong; the adult leaves are smooth; all are entire, have inconspicuous lateral nerves and the middle one elongated into an urn-bearing tendril. The *Cirrhi* of the lower leaves are not twisted, but hang straight from the apex: they terminate in large ventricose and highly colored ascidia or urns, fringed along the anterior angles with two membranaceous fimbriate wings, somewhat contracted at the mouth, which opens obliquely, rising much higher and somewhat recurved behind, where the operculum is inserted. The *Tendrils* of the upper leaves are twisted into one or two spires at the middle, and terminate in long ascending funnel-shaped urns, flattened anteriorly, but not winged, and gracefully turned at the mouth like an antique urn or vase. Both have the inverted margin beautifully and delicately striated, and variegated with parallel stripes of purple, crimson and yellow. The *Opercula* are incumbent, membranaceous, ovate, marked with two principal longitudinal nerves, and cuspidate behind the hinge. The *Racemes* are at first terminal, but the stem begins after a time to shoot beyond them and they become lateral, and are always opposed to a leaf which differs from the others in being sessile, and its cirrhus never having an urn at its extremity. The *Pedicels* are one-flowered.

MALE. *Calyx* deeply four parted, tomentose on the outer surface, smooth, red and punctate on the inner, segments oblong, obtuse, reflex. *Corolla* none. The *Stamineous column* (Columna staminea) central, erect, thick, red. *Anthers* numerous, yellow, contorted into a round terminal head.

FEMALE. *Calyx* as in the male. *Ovarium* superior, oblong, four-sided, erect. *Style* none. *Stigma* sessile, peltate, four-lobed. *Capsule* oblong, somewhat curved, four-angled, deeply furrowed at the sides, four-celled, four-valved, the valves septiferous in the middle, many seeded. *Seeds* long, linear, membranaceous and acute at both ends, arranged longitudinally, and affixed by the base to the partitions.

Obs. This is the largest and most magnificent species of the genus, being adorned with two kinds of urns, both elegant in their forms, and brilliant in their colouring. It was first discovered with the following species in the forests of Singapore by Sir T. Stamford Raffles, Lieut. Governor of Sumatra, when he established a British colony on that island in February 1819. To him therefore it is justly dedicated. *Jack in l. c. p. 23.*

TAB. 8.

NEPENTHES AMPULLARIA.

SPOTTED PITCHER PLANT.

NEPENTHES AMPULLARIA, caule basi repente surculos urniferos promente demùm erecto foliifero, cirrhis foliorum muticis, ascidiis petiolatis confertis ovatis inflatis anticè membranaceo-alatis ore coarctato subrotundo striato, operculo lanceolato reflexo posticè tricuspide. *Jack in l. c. p. 23.*

Found along with the preceding in the forests of Singapore, also at Rhio on the island of Bintang.

Root fibrous. *Stem* repent at the base, becoming erect, and supporting itself on the neighbouring trees, round, covered with a deciduous ferruginous down, urn-bearing at the base, and leaf-bearing above. The urn-bearing shoots or suckers are short, and spring from the repent part of the stem; they are entirely sheathed by the crowded petioles of the urns, which are dilated and amplexicaul at the base. The *urns* or *ascidia* are supported on short straight petioles; they are erect, ovate, inflated, green and spotted with purple, furnished anteriorly with two longitudinal membranaceous fimbriated wings; mouth somewhat contracted, striated, of a uniform yellowish green colour, and nearly round, the inverted margin being prolonged farther into the interior of the cup than in the other species. The *Operculum* is lanceolate-oblong, generally reflexed, tricuspid behind the hinge. It opens at an early stage, and as the urn enlarges, it becomes much too small to reclose it. The *Leaves* come on the erect part of the stem, and are alternate, subpetiolate, lanceolate, from eight to twelve inches in length, very entire, somewhat reflex at the margin, smooth above, covered with a ferruginous tomentum beneath, particularly on the nerves, terminating at the apex in a tendril which is generally thickened and revolute at the extremity; the lower ones have sometimes urns similar to those at the base of the stem. The *Racemes* are at first terminal, and afterwards as in the other species lateral and oppositifolious, erect, pyramidal, many-flowered; the lower pedicels 3-4 flowered, the upper one-flowered. The *Bracts* are linear, acute, and villous like the raceme.

MALE. *Calyx* four-parted, flat, ferruginously tomentose without, green and smooth within, segments ovate, rather acute, two opposite ones larger. *Corolla* none. *Stamineous column* central, erect, nearly as long as the calyx. *Anthers* about eight, yellow, two-celled, compacted into a globular head.

FEMALE. *Calyx* the same as in the male. *Ovarium* superior, oblong, erect, four-sided. *Style* none. *Stigma* peltate, four-lobed. *Capsule* oblong, narrow at both ends, four-angled, four-celled, four-valved, many seeded, valves septiferous. *Seeds* linear, paleaceous.

Obs. This species differs strikingly in habit from the others in having the urns crowded near the surface of the ground. They are also very different in shape, being somewhat of the form and size of an egg, inflated like a bladder, and the membrane thinner and more delicate than in the other species. The inverted rim is broad, and projects far into the cavity of the cup, forming a trap, in which numbers of flies and insects are taken. *Jack in l. c. p. 26.*

Nepenthes ampullaria

Weddell Sc.